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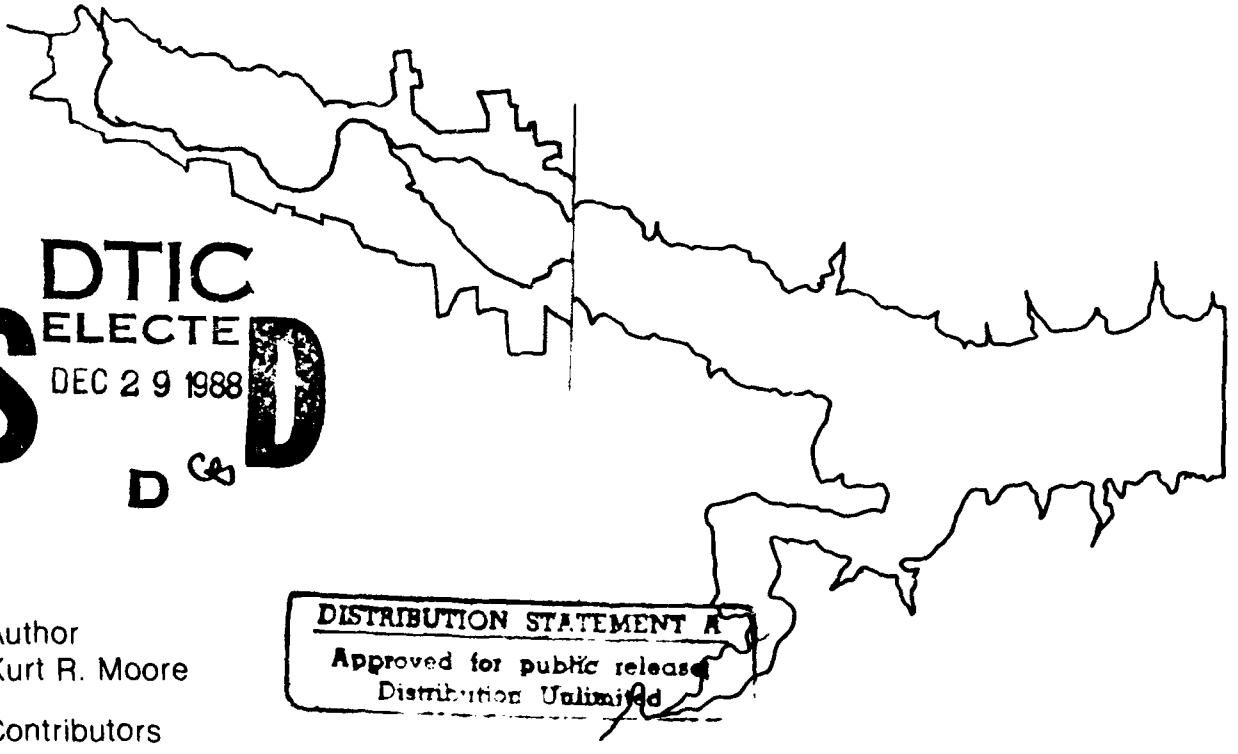
Kansas City District

Harlan County Lake Nebraska

American Resources Group, Ltd.
Carbondale, Illinois

A Cultural Resources Sample Survey in the Harlan County Lake Project Lands West of U.S. Highway 183 Harlan County, Nebraska



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A 10% sample cultural resources survey was performed on Harlan County Lake project lands west of U.S. Highway 183, Harlan County, Nebraska. Survey results produced 12 previously unrecorded archaeological sites. Subsurface investigations produced one site eligible for nomination to the NRHP. Test excavations produced stratified deposits (including a buried midden) to a depth of approximately 90 cm below ground surface and a feature extending to 1.72 m below surface.

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ABSTRACT

A 10% sample cultural resources survey was performed on Harlan County Lake project lands west of U. S. Highway 183, Harlan County, Nebraska. Survey results produced 12 previously unrecorded archaeological sites (25HN63 - 25HN74) ranging from very small lithic scatters to a large habitation site with midden deposits; 9 sites were on federal lands, 3 were adjacent to federal lands. Fifteen cultural/temporal components were defined: 1 Late Paleo-Indian/Early Archaic, 2 Woodland, 6 Upper Republican, 2 protohistoric, 1 historic Indian, and 3 historic Euro-American. Subsurface investigations ranging from shovel probes to 1/4 in screened unit-level excavations at prehistoric sites on federal land produced one site (25HN65) eligible for nomination to the National Register of Historic Places. Test excavations at 25HN65 produced stratified deposits (including a buried midden) to a depth of approximately 90 cm below ground surface and a feature extending to 1.72 m below surface.

Project goals and research questions addressed included a predictive statement concerning the number and distribution of sites to be found on remaining lands, relationships between site placement and topographic zones, and comparison of present survey results against previous studies. The data examined indicated the highest frequency of site occurrence on terraces, followed by upland environments, and finally bottomlands; the latter produced no prehistoric archaeological sites. This observed relative distribution of sites is consistent with results of previous surveys in the Harlan County Lake area.

General cultural resources management (CRM) recommendations are: 100% survey of remaining upland and terrace lands, monitoring of any future land altering activities in bottomland areas on an as-needed basis, and monitoring of all sites to discourage unauthorized collection. Site specific CRM recommendations are included also.

ACKNOWLEDGMENTS

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The field and laboratory crew for the project reported in the following pages consisted of Michael J. McNerney (principal investigator), Kurt R. Moore (supervising archaeologist and report author), Stephen F. Chapman (field assistant), Jerry J. Moore (field and laboratory assistant and report contributor), and Jonathan A. Bloom (faunal analysis and report contributor). Thanks are extended to Mr. Conrad Boehler, Mr. Jim Drake, and Mr. Stuart Drake, all Harlan County landowners, for providing site location data and allowing the field crew to photograph their personal collections. In addition, the author is grateful to Mr. James Briscoe and Mr. Joe Watson of Complete Archaeological Services Associates, Cortez, Colorado, for providing additional site information, reference materials, and sharing with us the results of their project which was run concurrent with this study.

The assistance provided by members of the Nebraska State Historical Society (NSHS) also is appreciated. Mr. John Ludwickson and Mr. Marvin Kivett provided site numbers and NSHS survey forms for this project. Messrs. Gale Carlson and Richard Jensen provided valuable input during the review process of both the prefield research design and report preparation phases. Other individuals who aided in the prefield records search include Mr. Thomas O. Thiessen, Midwest Archaeological Center (National Park Service), Lincoln, Nebraska; and Dr. Robert Pepperl (Anthropology), University of Nebraska, Lincoln.

The author would also like to thank those who transformed the handwritten draft and dusty field maps into the final report: Ms. Debra Tayes word processed the report, Ms. Barbara Rester drafted the maps and figures, and Ms. Sarah McNerney produced all photography for the report.

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INTRODUCTION

Project Description

The following report presents the results of a 10% sample survey of lands west of U. S. Highway 183 in the Harlan County Lake project area, Harlan County, Nebraska (Map 1). The entire area under consideration comprises 5,168 acres, of which 520 (10.06%) were intensively surveyed. The results of field survey and subsequent laboratory analyses presented in this report are in fulfillment of requirements pursuant to the Scope of Work for Purchase Order DACW41-83-M-0005.

Justification

The study performed herein by the Contractor for the Corps of Engineers is called for in the National Historic Preservation Act of 1966 (PL 89-665) as amended by Public Laws 94-422 and 96-515 and is authorized for funding under Public Law 86-523 as amended by Public Law 93-291. Accomplishment of this work provides documentation evidencing compliance with Executive Order 11593 "Protection and Enhancement of the Cultural Environment" dated 13 May 1971, and Section 110 of the National Historic Preservation Act.

Objectives

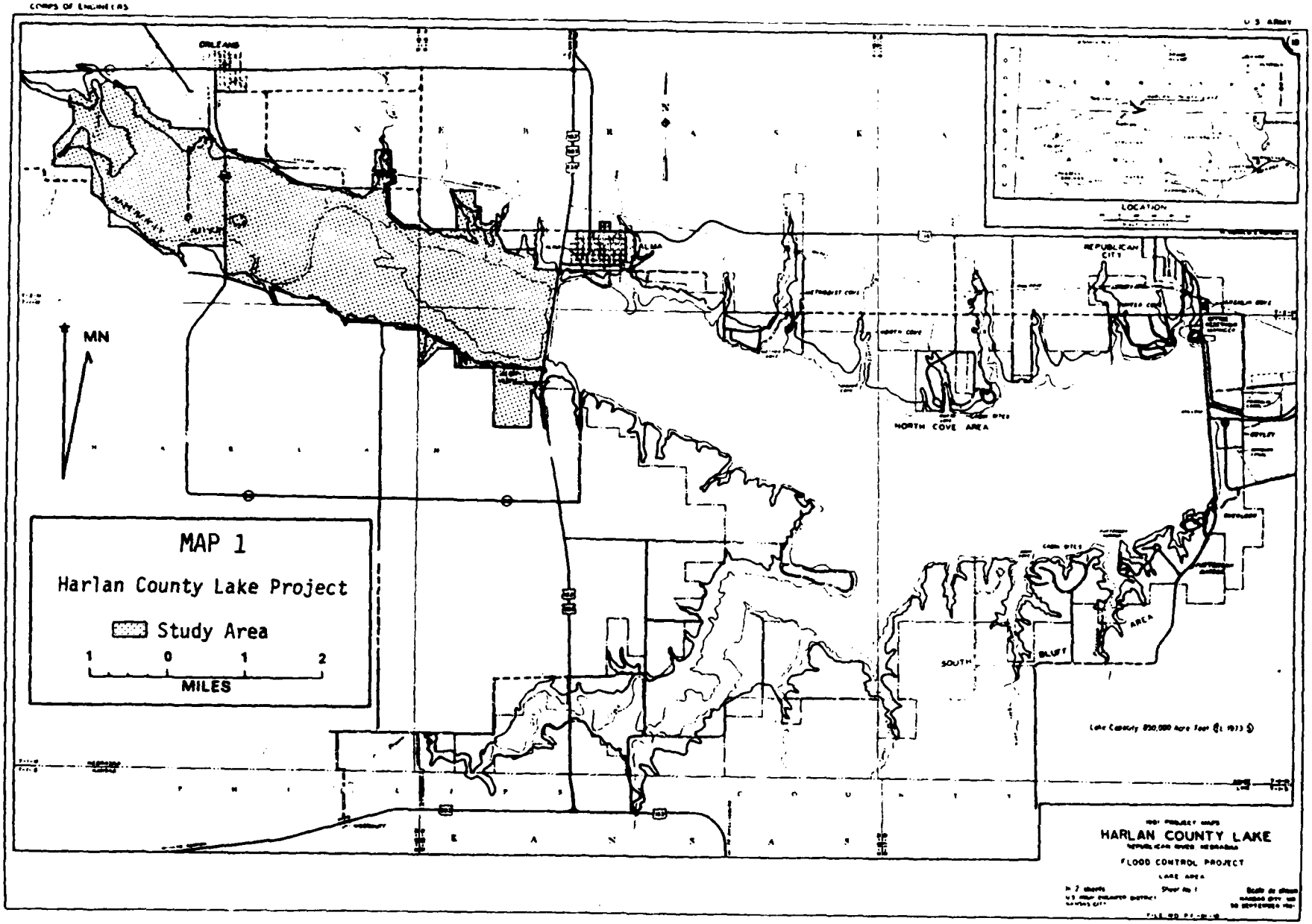
The primary objective identified by the U. S. Army, Corps of Engineers, Kansas City District, in DACW41-83-M-0005 is to perform a 10% survey of 5,168 acres of land west of Highway 183. Within this sample, the following primary objectives are to be achieved.

1. Intensively survey 100 acres of project timber harvest areas [to be delineated by the U. S. Army, Corps of Engineers].

2. Intensively survey 416 acres which shall be delineated by the Contractor [and approved by the government].

3. Identify and outline a plan of intensive survey for the unsurveyed portion of the study area. Construct a predictive model for cultural resources in this area. Indicate which parts of the area should not have any future studies and why. Justify priorities for such studies.

The results generated as part of this predictive model are utilized in formulating the cultural resources management recommendations that appear in this report under the section entitled "Recommendations."


MAP 1
Harlan County Lake Project
Study Area
1 0 1 2
MILES
MN
LOCATION
NORTH COVE AREA
HARLAN COUNTY LAKE
FLOOD CONTROL PROJECT

NATURAL ENVIRONMENT

Introduction

Detailed descriptions of various aspects of past and present environments of Harlan County have appeared in numerous works over the past 50 years. Some syntheses have been provided in previous studies as they related to human adaptation (e.g., Krause 1970; Wedel 1940, 1953b), both regional (Condra and Reed 1959) and local geology (Happ 1948), and paleontological studies (Schultz 1934). This report, as with previous reports (e.g., Pepperl and Falk 1979; Roetzel et al. 1982), presents only a summary overview of these topics.

Location

Harlan County Lake is located in the extreme southern half of Harlan County, Nebraska, on the Nebraska-Kansas boundary and abuts Phillips County, Kansas, to the south. The project area is centered at approximately 40° 5' N and 99° 22' W and is located about 150 mi (241 km) southwest of Lincoln, Nebraska, and about 200 mi (321 km) northwest of Topeka, Kansas.

The entire lake project area is contained within the boundaries of Harlan County. The project area contains 30,260 acres (12,246.22 ha) and extends for approximately 12 mi (19.3 km) along the Republican River.

General Physiography

Harlan County is situated in the Great Plains physiographic province in an area of dissected loess plains that extend from the Sandhills region to the north in central Nebraska, across the Platte and Republican rivers, and south to the Smoky Hills and Blue Hills of northcentral Kansas (Pepperl and Falk 1979:2). The county is drained primarily by the easterly flowing Republican River and its tributaries (Mitchell et al. 1974:1), with the exception of the relatively flat, northeastern portion of the county. Major tributaries of the Republican River that flow into the project area are Sappa and Prairie Dog creeks, both of which originate in northwestern Kansas. Other tributaries include Cook, Methodist, Rope, and Flag creeks. The Republican River is part of the greater Missouri River drainage system and flows into the Kansas River near Junction City, Kansas. In turn, the Kansas River empties into the Missouri River at Kansas City, Missouri.

Harlan County lands can be divided into three major groups: uplands, stream and river terraces, and alluvial bottomlands. All three

are found within the project area. Upland areas within the project area are highly dissected and traversed by wide gullies feeding into the Republican River.

The entire project area consists of 30,260 acres of which 13,910 are permanently inundated below the normal pool level (1,946 ft MSL). Of the remaining 16,350 acres, 7,395 acres (45%) represent upland environments, 5,060 acres (31%) are terrace lands, and 3,895 acres (24%) are floodplain bottomlands.

The immediate study area consists of 5,168 acres above normal pool level west of Highway 183. This area is predominantly lowlands comprising 3,937 acres of floodplain and very low terrace remnants (76.2%), 828 acres (16.0%) of terraces, and 403 acres (7.8%) of uplands.

Geology and Soils

As Pepperl and Falk (1979) note, there are five lithologically distinct geologic units exposed or near the surface in the Harlan County Lake vicinity.

> They are, from oldest to youngest: 1) the Niobrara Formation, a marine chalky, shaly limestone of Cretaceous age; 2) the Pierre Shale, a marine, carbonaceous, limy shale of Cretaceous age; 3) the Ogialla Formation (or Group), a fluvial sandstone with local lenses of gravel, silt and clay of late tertiary age; and pleistocene deposits of 4) Fluvial Sand and Gravel and 5) loess (Pepperl and Falk 1979:41).

Both the Niobrara and the Pierre formations are exposed in the Harlan County Reservoir area, but were not encountered in any of the survey tracts. The Niobrara underlies the western portion of the Harlan County Lake area, and the Pierre underlies the eastern portion of the lake and Harlan County (cf. Lugn 1935:35).

Prehistorically and historically important geological resources are reviewed in Miller (1964:10-16), Thomas (1975), and Pepperl and Falk (1979:43-44). Materials encountered on prehistoric sites discovered during the present survey derive from the Ogialla and Niobrara formations. These include Republican River jasper (chert), an orange-brown to red, often banded, lenticular silaceous, silicified chalk from the Niobrara Formation near its contact with the Ogialla beds (Carlson and Peacock 1975; Miller 1964:12), and a coarse grained, greenish feldspathic chert (quartzite) from the Ogialla Formation (Miller 1964:16).

While no potentially exploitable outcrops (regarding prehistoric lithic technology) of lithic materials were encountered during the survey, it was reported (Complete Archaeological Services Associates [CASA] 1983:4) that Niobrara Formation chert outcrops approximately 20 mi (32 km) west of the project area.

An extensive and often deep loess mantle caps the bedrock

geological structure of the area. Pre-Pleistocene (mostly Cretaceous) outlet valleys have cut steep gradients in valleys such as the Republican River, later filled by tertiary sand, gravel, and loess deposits (cf. Lugn 1935:37). Similarly, post-Pleistocene erosion has cut steep gradients through the loess; in parts of the Republican River valley, exposed bluffs reveal over 100 ft of loess deposits (Strong 1935:35).

Modern soils in the Harlan County area are found primarily in the loess deposits of the Late Pleistocene and Early Holocene. The primary loess deposit in the area is the Peoria loess, underlain by the Loveland loess. Harlan County contains four major soil associations, three of which are present in the project area: Holdrege-Coly-Uly association, Hord-Lozad-Hall association, and McCoole-Munjor-Inavale association. The Holdrege association, formed in deep loess mantles, is characteristic of the level upland areas removed from major stream and river valleys and does not occur in the project area.

Holdrege-Coly-Uly soils are characterized as "deep, very gently sloping to steep, silty soils in divides and drainage ways in the loess mantled uplands" (USDA 1972:4). Only two soil types were encountered at sites in this group: Coly and Hobbs silt loams (Coly series) and Uly and Coly silt loams (Uly series). Both are characteristic of moderately steep to steep grades and subject to severe water (run off) erosion (cf. Mitchell et al. 1974:9, 23), a factor important in the management aspects of sites found in these soil types.

Hord-Lozad-Hall soils are described as "deep, nearly level to gently sloping, silty soils on stream terraces and narrow bottom lands" (USDA 1972:5). All but one of the prehistoric sites discovered during the survey were situated on these soils which are commonly found in terrace situations. Specific soil types encountered are two variants of the Hord and Hall silt loam (HrA and HrB) and the Hobbs and McCook silt loam (HmA).

The McCook-Munjor-Inavale soils represent "deep, nearly level to very gently sloping, loamy soils on bottom lands" (USDA 1972:6). Only historic sites were encountered in these soil types. Specific soil types encountered were Munjor loamy fine sand (MtB), McCook loam (Mc) and Inavale fine sandy loam (InB). This last type appears to have been flood deposited and contained redeposited cultural material. Soils of this association all appeared in floodplain context.

Flora and Fauna

While much of modern Harlan County is composed of farm and range land, the area was formerly a prairie environment prior to Euro-American settlement. The dissected loess plain surrounding the project area is a transitional zone of mixed-grass prairie, predominantly bluestem-gramma (Andropogen - Boutelorea), located between the short grass prairies (gramma - buffalograss: Bonteloua - Buchloe) to the west, the wheatgrass bluestem-needlegrass prairie (Agropyron - Andropogan - Stipa) to the north, the bluestem prairie (Andropogan - Panicum - Sorghastrum) to the

northeast and east, and the mixed bluestem prairie oak-hickory (Quercus - Carya) forests further east (cf. Küchler 1975).

The floodplain of the Republican River supports a forest environment, an extension of the Northern Floodplain Forest (Populus - Salix - Ulmus). Older inhabitants of the area also recall large areas of tall grass prairie in the floodplain, in contrast with the short grass prairie growth in the uplands. Today, the floodplain area of the project area is either wooded or in agricultural crops.

The upland areas support predominantly prairie grass growth. A few trees, mostly oak, can be found in gullies where some moisture is retained. Prickly pear cactus, yucca, and wild gourd were observed by the field crew in upland survey tracts.

This predominantly grassland environment once supported large herds of bison, which Strong (1935:35) had characterized as "the heart of the old buffalo range." Now gone, these wild herds have been replaced by domesticated cattle. Deer, elk, and antelope were other important game animals. One of the most prevalent mammals in the area is the prairie dog, particularly in the upland portions of the project area. Wolves (now extirpated), coyotes, and badgers formed the major predatory species. Along the streams, particulary where Sappa Creek joins the Republican River, beaver are common. Numerous species of fish, small mammals, and other riparian fauna along the river valley constituted other economically important animals for prehistoric populations.

Climate

The general climate of Harlan County is semiarid, characterized by warm summers and relatively cold winters. Myers (1974:61) notes that this is a fairly typical condition in the interior of a large continent at this latitude. It is one of the most salient characteristics of the regional environment.

Mean annual rainfall is 22.3 in (Myers 1974:62) and highly variable. Although most of the rainfall occurs from April through September, cropland is irrigated with water from Harlan County Lake. Spatial patterning of precipitation is also variable, characterized by local showers, thunderstorms, and hail. Harlan County is located near the limits of the 120-day frost free growing season (Pepperl and Falk 1979:3).

CULTURAL CONTEXT

Introduction

Archaeologists have developed a broad cultural/historical classifactory scheme with which to organize and describe the prehistory of various parts of the United States. Such schemes vary from region to region and reflect spatial and temporal differences in man's cultural expressions and adaptation to his environment. Willey and Phillips (1958) have outlined geographical criteria for the presentation of such data focusing on the divisions of area, subarea, region, locality, and site. The Plains area as defined geographically, coincides generally with a scheme of sociocultural classification manifested both archaeologically and ethnologically as the Plains Indian culture. Within this broad Plains classification, Wedel (1961) has outlined (archaeologically) five subareas: the Northwestern Plains, the Middle Missouri, the Northeastern Periphery, the Central Plains, and the Southern Plains.

The Harlan County area is part of the Central Plains subarea. A temporal outline for this subarea was first formulated by Blackman (1904) who divided the sequence into two periods; the recent (incorporating historic Pawnee sites from 1850 to the present) and the ancient. Strong's (1935) synthesis of Nebraska archaeology presents a more developed temporal scheme, recognizing a distinct protohistoric period, and further spatial, temporal, and cultural distinctions within all major periods. Champe (1946) refined this outline somewhat by incorporating a stratigraphic sequence of Central Plains sites and focusing on general technological aspects for classifactory criteria.

Wedel provided further refinements of the archaeological data (1940, 1947, 1956) and produced a general classification (1959, 1961) for the Central Plains (Figure 1) arising out of the Midwestern Taxonomic System (McKern 1939). Wedel's (1961) classification has been used as the basis for later reclassifications of the Central Plains prehistoric sequences using both the older Midwestern Taxonomic System (e.g., Champe 1961) or more recent attempts at spatial-temporal classification using the Willey and Phillips (1958) method such as those by Anderson (1961), Brown (1966), and Krause (1969) with particular reference to the late prehistoric and protohistoric Plains cultures. In addition, these broad regional overviews have been used to address the placement of both temporal (e.g., Frison 1978) and area specific (e.g., Blakeslee and Caldwell 1979; Grange 1968) sequences within the context of the overall Plains sequence. Such problems of taxonomy and classification are not unique to the Central Plains; however, the Central Plains classification is illustrative of the ongoing concern in

Figure 1

Central Plains Archaeological Sequence and Classification

Approximate Date		Period
A.D. 1876	Historic Pawnee Focus and other historic tribes	Historic Native American
A.D. 1750	Lower Loup Focus Red Bird Focus Great Bend Aspect White Rock Aspect Oneota Aspect Dismal River Aspect	Protohistoric
A.D. 1500	Upper Republican Aspect Nebraska Aspect	Central Plains Village Tradition
A.D. 1000	Smoky Hill Aspect	
A.D. 1	Early Ceramics	Plains Woodland
2000 B.C.	Hunting-Gathering Complexes	Plains Archaic
6500 B.C.	Early Hunting Complexes Clovis	Paleo-Indian
12,000 B.C.	Folsom	

after Grange 1968:13, Wedel 1961

archaeology for interpretation and ordering of the archaeological record (cf. Willey and Sabloff 1974:110-123).

The long archaeological sequence of the Central Plains, beginning with the Paleo-Indian complexes and ending with the Historic Plains Indian groups, reflects both increases and changes in cultural complexity beginning with band-level nomadic hunters evolving into more complex, sedentary societies. Subsistence activities begin with a mixed hunter-gatherer economy and culminating with plant domestication reflecting an increased reliance on the three major New World domesticates -- corn, beans, and squash. Increases in human population and trends toward larger population aggregates are evident, reaching their apex in the large, sedentary villages of the Protohistoric, just prior to contact with the white man. The following outline is presented as an overview of the archaeological sequences as they pertain to the Harlan County Lake project area for the interpretation of archaeological data and evaluation of research questions.

Culture History of the Central Plains

Paleo-Indian Period (ca. 12,000 B.C. - ca. 6500 B.C.)

The Paleo-Indian period is best known in the western United States where numerous archaeological sites have produced cultural material in association with late Pleistocene fauna. Traditional pictures of Paleo-Indians portray them as nomadic, big-game hunters exploiting first the mammoth and then the bison through the Pleistocene-Holocene transition. Recent research is presenting a more varied and complex picture of these early Americans (Graham et al. 1981).

The big-game hunting tradition appears to be more emphasized and perhaps of longer duration in the Plains cultural area than in the Eastern Woodlands (Willey 1966:312). As in other cultural areas, both spatial and temporal overlap are found among archaeologically defined cultures in the Central Plains area (cf. Welchman and Sturdevant 1977:19). The Paleo-Indian period has not been dated conclusively for the Central Plains, with temporal parameters being estimated variously between ca. 12,000 - 8000 B.C. (McNerney and White 1981:8-9) and ca. 10,000 - 6000 B.C. (Witty 1979:8). The temporal transition from the Paleo-Indian period to the Plains Archaic is obscured by the gradual transition in subsistence practices from primarily large-game hunting to a mixed hunter-gatherer economy as late Pleistocene fauna were replaced by more modern forms. It has been suggested that the early hunting complexes (although not necessarily of the Paleo-Indian cultural tradition) may persist to ca. 4500 B.C. (Grange 1968:13; Willey 1966:312).

The Paleo-Indian period is sparsely represented in the Harlan County area. Three sites have been assigned to this period, only one (25HN57) of which produced a fluted projectile point. The other two are assigned on the basis of two crude chopping tools at one locality (25HN110) and the presence of a jasper flake and mastodon toe bone at another (25HN138) (Roetzel et al. 1982:131).

Plains Archaic Period (ca. 6500 B.C. - A.D. 1)

The Plains Archaic tradition represents a shift in subsistence strategies away from reliance on large game herds to further exploitation of smaller animals and increased reliance on natural plant food resources. The origins of this transition are cloaked in obscurity preceding the Altithermal (Hypsthermal) climatic episode, a time during which decreases in relative moisture minimized human occupation in arid zones such as the Plains and the Grand Prairie to the east (see Buchner 1980).

Relatively fewer Archaic sites are reported for the Central Plains than for other subareas of the Plains. Some of the regional traditions during this phase (e.g., Logan Creek ca. 4000 B.C.) "are in effect the westernmost representatives of the early Archaic culture of the Eastern Woodlands" (Willey 1966:316). Within the Harlan County Lake project area, the Archaic is represented by even fewer sites than the preceding Paleo-Indian period. In fact, only one site (25HN146) is assigned to the Archaic, based on the presence of a flint side-notched projectile point attributed to the Logan Creek Focus (Roetzel et al. 1982:131).

Plains Woodland Period (ca. A.D. 1 - 1000)

The Plains Woodland tradition is marked by increased reliance on horticulture and the appearance of thick cordmarked ceramic ware. While evidence of early cultigens (corn and squash) have been recovered from Woodland sites in the Central Plains, it has been noted (Roetzel et al. 1982:21) that questions regarding the first appearance of such food crops and the extent of horticulture as part of the prehistoric subsistence economy have yet to be resolved. Hunting and gathering was still prevalent, and exploitation of the environment tends to focus on wooded creek valleys.

Woodland period habitation sites tend to be located on river terraces, just above the floodplain. Studies by Kivett (1970:97-98) in the Republican River valley and by Johnson (1974) in Platte County, western Missouri, support such a settlement model. A study in the south Platte River drainage in eastern Colorado (Scott 1973) also supports the stream valley orientation for Plains Woodland settlement patterns, but adds the dimension of sites being located in high exposed locales rather than low terraces. Recent investigations in the Harlan County Lake project area (Pepperl and Falk 1979:14) indicate a preference for terrace locales, with the only high elevation site being an ossuary rather than a habitation site.

The advent of ceramic technology appears to be the most salient aspect of Plains woodland material culture. Thick, cordmarked ceramic ware is characteristic of the Woodland period and often is associated with habitation sites in the Republican River area (Roetzel et al. 1982:21).

Plains Village Period (ca. A.D. 1000 - Historic)

The Plains Village period represents a shift to larger population aggregates clustered in larger villages and the development of regional variation in settlement patterns. This period "appears to represent an incursion into the [Central Plains] area by peoples from another region (probably to the south), to a great extent supplanting the Woodland lifestyle which had previously existed" (Roetzel et al. 1982:21). Emphasis was still on terrace locales with villages located in both major and minor stream valleys.

In addition to larger, more permanent villages, other changes in lifestyle and material cultures are more evident. Basic subsistence economies shifted towards an increased reliance on cultigens, including the development of a maize-beans-squash complex (Willey 1966:320), in addition to other crops, with the gardens located in river bottoms. Village locations still show a preference for terraces, although locational patternings seem to indicate a shift towards the larger river valleys, with outlying sites representing more specialized activity loci. Ceramics are more prevalent than in the earlier Woodland period; and, being roughly contemporaneous with the early Mississippian culture of the Eastern Woodlands, Plains Village ceramics show influence from the east particularly in vessel form and elaboration of decorative techniques (Willey 1966:32).

Regional diversification is represented by cultural manifestations defined on the basis of distinguishable cultural assemblages. The Early Plains Village tradition (ca. A.D. 1000 - ca. 1500) is perhaps best documented in the Central Plains subarea, including regional foci such as the Nebraska Aspect (eastern Nebraska and Kansas and southwest Iowa), Smoky Hill Aspect (eastern and north-central Kansas), and the Upper Republican Aspect of west-central Kansas and Nebraska which occurs in the study area.

Upper Republican Aspect (ca. A.D. 1000 - ca. 1500). The Upper Republican culture (or aspect), originally defined by Strong (1933), is centered along the Republican River in the Loess Plain region of Nebraska, extending to western Nebraska and into north-central Kansas (Roll 1968; Strong 1935:275). While considered to be more intense agriculturalists than the preceding Woodland period inhabitants, hunting and gathering were practiced widely. The Upper Republican complex retains more Woodland elements such as cord-roughened ceramics than areas to the east subjected to Mississippian influences (cf. Willey 1966:321).

Recent overviews on the Upper Republican components have been assembled by Carlson (1971), Krause (1969, 1970), and Roll (1968). Krause (1969) presents a temporal sequence of Upper Republican settlement patterns beginning with small, clustered farming hamlets on river terraces, developing into small villages with dispersed housing patterns, and finally incorporating seasonal fishing and hunting camps into the overall settlement strategy. The latter phase of Upper Republican culture is represented in and near the study area along

Medicine, Lost, and Prairie Dog creeks (Pepperl and Falk 1979:16). Pepperl and Falk's study presents a picture of settlement dispersed more or less evenly along the terraces of both the Republican River and its tributaries. In addition, two ossuary sites indicate burial preferences in an upland situation further removed from the river locale (1979:17).

Protohistoric (ca. 1500 - 1750). Plains cultural continuity appears to break with the decline of Upper Republican culture ca. A.D. 1400 - 1500, especially in the Central Plains. The abandonment of smaller Upper Republican villages is documented, but not satisfactorily explained; hypotheses include pressure from eastward expanding nomadic groups or prolonged drought (Wedel 1940, 1961). Rather than disappear entirely, it seems that Upper Republican culture was displaced to the northeast towards the Missouri drainage and "reconstituted a culture known as the Lower Loup phase" (Willey 1966:326) along the Loup and Platte rivers of Nebraska.

The Protohistoric (ca. A.D. 1500 - 1750) or middle phase of the Central Plains Village tradition represents a period of initial contacts with both non-Plains Indians and Europeans.

Wedel (1961:286-287) cites a pattern of larger population aggregates clustered in fewer villages. Population distribution shifts to the major river valleys, and residence patterns show the development of large circular earth lodges. Subsistence patterns still reflect a largely sedentary population engaging in a mixed horticultural and hunter/gatherer economy. Two sites previously examined in the study area (25HN39 and 25HN45) have been assigned to the White Rock Aspect (ca. 1500 - 1600) and have been interpreted as bison hunting camps (Rusco 1960:75).

The influx of southern and western nomadic groups into the Central Plains region is designated as the Dismal River Aspect (ca. A.D. 1675 - 1725) and represents a later protohistoric development. Archaeologically, these sites represent the Plains Apache and Comanche, whose subsistence orientation was directed more towards a hunting economy, and appear to have entered the area prior to the introduction of the horse (Schlesier 1972; Wedel 1961:115). One site in the Harlan County Lake area (White Cat Village, 25HN37) has been dated dendrochronologically to ca. 1723 (Gunnerson 1968), while a component of site 25HN44 also has been assigned to the Dismal River Aspect.

Historic Indian (ca. 1750 - 1876). The last phase of the Central Plains Village tradition, or Historic Indian period, begins ca. A.D. 1750 - 1800. While it is recognized that Coronado's 1541 expedition throughout the southwest marks the beginnings of recorded history in the southwest and Plains area, such visits by explorers were infrequent.

The Historic Indian period is one of full development of the historic Pawnee into its distinctive cultural form prior to its transformation to a reservation-based lifestyle after 1876. The traditions characteristic of the historic Pawnee have their genesis in the earlier Protohistoric culture complexes, particularly the Lower Loup

phase which is generally recognized as protohistoric Pawnee. Grange (1968:12) notes that seasonal hunts away from the village and a concentration of larger village populations, typical of the historic Pawnee, were characteristics probably formed during the Protohistoric period. Grange cites both characteristics as perhaps contributing to later social and ceremonial changes. By the beginning of the Historic period, the Pawnee are ascribed as "the best known tribe from an archaeological point of view in this period in the Central Plains and well represent what was happening to many of the village tribes" (Grange 1968:12-14).

Pepperl and Falk (1979:19) assign a total of five sites in the reservoir area to the Historic period. In addition, one site (25HN16) investigated during an earlier reconnaissance (Falk and Thiessen 1972) has been associated with the Historic period due to the recovery of an iron projectile point and a bone from a modern horse.

Euro-American Historic Period (ca. A.D. 1870 - Present)

It is not known when the earliest Euro-Americans entered the Harlan County area. While the Spanish explorer Francisco Vasquez de Coronado explored parts of the southwest and southern Plains in the 1540s, Dunlay (1979:69) doubts that Coronado came anywhere near the study area or ever entered Nebraska. Dunlay (1979), in his historic overview of the area, concedes that it is possible that Spanish traders or explorers may have entered the Nebraska region later in the seventeenth and eighteenth centuries. Holder (1970:5-17) briefly outlines the sequence of early European contacts with Plains cultures, notably Spanish explorations from the southwest in the sixteenth century, and subsequent French voyagers into the Plains from the middle Mississippi drainage in the seventeenth century.

The Republican River area appears to have been bypassed by early travelers and settlers who seemed to prefer the Platte River to the north or the Arkansas River to the south for westward travel routes. The explorer, Zebulon Pike, passed near the study area, visiting a band of Pawnee in 1805, at a location believed to be approximately 70 mi downstream from the Harlan County Lake project area (Dunlay 1979:69). Similarly, another early explorer, Jedediah Smith, passed near the study area in late 1825, enroute to the South Platte River on a westward journey (Brooks 1977:20; Morgan 1953:154-158). Again, it is quite probable that early trappers and traders passed through the region, leaving little or no account. The famed Indian scout William "Buffalo Bill" Frederick Cody is reported to have been in the area of Prairie Dog Creek on a trapping expedition in 1859 (Dunlay 1979:70). The first documented account of travel through the area was that of a U. S. Army encampment, under the command of Col. Alberto Sidney Johnston, near Alma, Nebraska, in 1857. Military expeditions in the area continued through the 1860s and 1870s, including one accompanied by Buffalo Bill Cody in 1869 (Rogers 1967:2).

Although Harlan County lands were filed under the Homestead Act (approved May 20, 1862; effective January 1, 1863), serious attempts at

settlement did not begin until the 1870s. Problems with Indians, including a massacre of a government survey party by Sioux or Cheyenne in summer 1869 in the Republican River valley (Rogers 1967:2), and resultant lack of official land surveys (Dunlay 1979:72) appear to have retarded early settlement in the area.

The first attempts at large-scale, permanent settlement occurred in the early 1870s, marking the beginning of the Euro-American Historic period. Settlers came from two major groups: Union veterans of the Civil War and northern Europeans. During this period, the towns of Orleans and Alma were settled primarily by Germans and Scots, while Irish, English, and Scots groups settled in Alma and Republican City (Rogers 1967:2). The original site of Republican City is now inundated by the Harlan County Lake project; its present site was selected in the late 1940s.

Early Euro-American settlement patterns are similar to those outlined for other parts of the mid-continental United States. Farms were first constructed in the bottomland and subsequently moved out of the river valley into the prairie. Corn and hogs appear to have been the focus of early farming activities. Wheat and milo (sorghum) also have become increasingly important, and a diversified agricultural base still remains.

The devastating flood of June 1, 1935, is perhaps the most significant single historical event to have occurred in Harlan County. Although local tradition states that Indians warned early settlers not to settle in the floodplain, Euro-American groups did not heed the advice, being attracted to the fertile bottomland soils. Flooding in the Republican River valley was not uncommon with somewhat severe floods occurring in 1911 and five different floods in 1915 (Rogers 1967). The 1935 flood is recorded as the most devasting, killing 104 people between McCook, Nebraska, to the west and Alma, with 25 deaths alone in Harlan County (The Orleans Chronicle 1935).

The 1935 flood also represents a significant time marker in terms of the historical archaeology of the area. Effectively, all Euro-American industrial and habitation sites in the bottomlands of the study area antedate 1935. Houses, outbuildings, and other buildings are no longer extant, although a few iron and concrete grain silos and broken windmills survive today.

Prior to 1983, no Historic Euro-American sites have been identified (Pepperl and Falk 1979:19) in the area as the result of cultural resources investigations. Two known sites are underwater: Col. Albert Sidney Johnston's campsite (1857), south of Alma, and the former site of Republican City (1871 - ca. 1946). For a more comprehensive overview of early history in the Harlan County area, the reader is referred to Dunlay (1979) and Rogers (1967).

Previous Archaeological Investigations

Most archaeological investigations concerning the prehistory of the

Central Plains has been conducted only since the late 1920s (Grange 1968:3). Prior to the establishment of the University of Nebraska Archaeological Survey in 1929, most professional work in Nebraska was concentrated on the middle Missouri drainage of eastern Nebraska, and work throughout the state was largely uncoordinated (Strong 1935:50). Much of the data presented in Strong's (1935) Introduction to Nebraska Archaeology was the result of professional work initiated in 1929 and includes documentation in the Republican River drainage in and near Harlan County.

As Pepperl and Falk (1979:4) note, "Prior to 1930, and through subsequent years, extensive work in the project area [Harlan County Lake project] by private individuals is apparent but little of this work has been reported or recorded for scientific study." In fact, activities ranging from uninformed collecting to full-scale looting appears to have been a favorite weekend pastime in parts of Nebraska since the late 1800s (cf. Paine 1935:55-57). Much of the early work conducted by the state survey relied heavily on cooperation from serious amateurs for information on site locations.

The earliest documented work near the study area appears to have been conducted by Strong in 1928-1929 at a habitation site along Lost Creek east of Harlan County. Later, between 1929 and 1931, Strong conducted excavations in the study area along Prairie Dog Creek and the Republican River at the Graham ossuary site, Marshall site, Alma ossuary, and other selected spots in the vicinity (Strong 1935:103-123). Much of this work was done in cooperation with A. T. Hill, who later became the Director of Museum and Field Archaeology of the Nebraska State Historical Society. Hill continued sporadic investigations in the area through the 1930s, working closely with the Nebraska State Archaeological Survey and the Smithsonian Institution (Pepperl and Falk 1979:6). It was from this early work that the "Upper Republican culture" was defined (Strong 1933).

Systematic archaeological investigations in the area were initiated by the Smithsonian Institution River Basin Survey in 1946, in conjunction with the Harlan County Lake project. This work included both a reexamination of previously recorded sites and survey and excavation of newly discovered sites within the then proposed impact area. Details and synthesis of these investigations are presented by Kivett (1947a, 1947b, 1953) and Wedel (1953a, 1953b) and are briefly reviewed by Pepperl and Falk (1979:9-10). These investigations yielded 23 sites (16 habitation and 7 burial sites) representing both the Plains Woodland and Plains Village traditions.

Subsequent archaeological fieldwork was undertaken by the University of Nebraska archaeological field school between 1948-1952. The major emphasis of these undertakings was the subsurface investigations of prevously recorded sites, augmented by survey procedures in the area of these sites. A total of 19 sites was investigated, including 9 previously unrecorded sites.

The field school investigations and subsequent analyses presented a

broader picture of prehistoric activity in the area. In addition to the previously noted Woodland and Village periods, sites associated with the Dismal River Aspect and White Rock Aspect of the Protohistoric period were examined. Results of these investigations are presented in both published reports and unpublished manuscripts by Champe (1949, 1950), Cummings (1953), Gunnerson (1950, 1960, 1968), Kivett (1953), and Kivett and Holder (1949). Analyses and reexaminations of materials recovered during the 1948-1952 seasons continued on through the 1960s such as Rusco's (1960) overview of protohistoric ceramics and Roll's (1968) examination of Upper Republican culture.

Although analyses of Harlan County materials continued long after the University of Nebraska field school, actual field work in the area was discontinued until the 1970s. A short reconnaissance of known sites was undertaken by the National Park Service, Midwest Archaeological Center, in 1972 (Falk and Thiessen 1972) as the first step towards a cultural resources management program for the area.

A formal management plan for the Harlan County Lake project was developed for the U. S. Army, Corps of Engineers, by the University of Nebraska (Pepperl and Falk 1979). This plan included a review of previous work in the reservoir area, additional survey of approximately 10% of the area east of U. S. Highway 183, and a summary of the early history of the area.

The latest phase of completed archaeological investigations was conducted in 1982 by Impact Services, Inc., of Mankato, Minnesota (Roetzel et al. 1982). A total of 64 previously unknown sites was recorded in the reservoir area, and 14 previously known sites were tested for eligibility for nomination to the National Register of Historic Places (NRHP). In addition to more information on the Plains Woodland and Plains Village traditions, findings recorded the first known representations of the Plains Archaic period at one site and the Paleo-Indian period at three sites (Roetzel et al. 1982:131).

RESEARCH DESIGN

Introduction

A complete research design (Moore and Hoxie 1983) was submitted to the Kansas City Corps of Engineers prior to commencement of field research. The original document was exhaustive in that it included a culture history overview and a methodology section (which now appear as separate chapters to this report), as well as data relevant to facilities and capabilities of American Resources Group, Ltd. A condensed research design is herein presented. The research design per se consisted of the objectives, sampling design, and research questions (Moore and Hoxie 1983:17-32). These sections constitute the bulk of the research design which follows.

Objectives

The main objectives to be accomplished by the field and laboratory research determined formulation of the research questions and the manner by which data were gathered. The objectives, which appear in the introductory chapter, bear repeating in order to set the context for the sampling design and research questions.

The overall requirement was to perform a 10% survey of 5,168 acres of land west of U. S. Highway 183. Three main objectives were to be achieved.

1. Intensively survey 100 acres of project timber harvest areas [to be delineated by the U. S. Army, Corps of Engineers].

2. Intensively survey 416 acres which shall be delineated by the Contractor [and approved by the government].

3. Identify and outline a plan of intensive survey for the unsurveyed portion of the study area. Construct a predictive model for cultural resources in this area. Indicate which parts of the area should not have any future studies and why. Justify priorities for such studies.

The results generated from the field survey, laboratory analysis, and subsequent predictive modeling (see Conclusions) are used in determining cultural resources management recommendations which appear in the Recommendations section.

Definition of Site Type

Site type classification is the result of the interpretation of field data in the context of current knowledge of human settlement and subsistence systems. Whereas, classification of historic sites is a relatively easy matter due to closer cultural affinity to modern urban industrial life and preponderance of data afforded by literate civilizations (cf. Hsu 1967), typologizing prehistoric sites is another matter. Often, little or no ethnohistorical data exist for a particular area, and interpretations of cultural remains and prehistoric lifeways are based on ethnoarchaeological inferences (cf. Binford 1980). Prehistoric cultural remains and other evidence of past human activity are assessed in terms of environmental data and present knowledge of prehistoric settlement and subsistence systems. As a result, site classification is necessarily general, and refined interpretations are made on a site-by-site basis.

Site classification for this project adopted a general classificatory scheme employed by Roetzel et al. (1982:16-19). This method was chosen for two reasons. First, the theoretical precepts upon which it is based are well accepted, and the scheme presents a simple, well defined method of organization. Second, its use would provide a modicum of continuity between the two studies and allow for interstudy comparisons.

Four site types are recognized: habitation sites, camp sites, lithic scatters, and find spots. They are defined as follows:

> A habitation site is defined here as a site which exhibits evidence of long-term occupation of an area by prehistoric peoples. Because the relationship between sedentary or semi-sedentary habitation and ceramics is well documented in the archaeological literature, if a site yielded ceramics it was classified as a habitation site. In addition to the ceramics, these sites have yielded stone tools and a wide range of lithic debris.
>
> A camp site is a site which has no evidence of long-term occupation. It is generally characterized by scattered lithic debris and stone tools. No site which yielded ceramics was classified as a camp site. A lithic scatter is a site which yielded only lithic debris. Because of the variation in the size of the lithic scatters, they have been arbitrarily broken down into small, medium, and large. A small lithic scatter yielded 2-10 artifacts (a single artifact is a find-spot), a medium lithic scatter yielded 11-25 artifacts, and a large lithic scatter yielded more than 26 artifacts. A find spot is defined as any area at which only a single artifact was recovered (Roetzel et al. 1982:18).

Roetzel et al. (1982:16) had added a second dimension to the site typology, that of the relative degree of disturbance that had occurred at a site. This was not utilized since the present survey did not have

to contend with areas affected by shoreline erosion or considerable amounts of construction redeposition.

Sampling Design

In order to acquire adequate data for the predictive statement required by objective three, a sampling strategy was devised. Construction of the sampling framework took into account project specific archaeological and statistical considerations.

The predictive model is based on the results of a probability based sample within the project area. Emphases on sampling strategy in archaeology arise from the influence of Binford (1964) and Struever (1968a), and predictive modeling has become the vogue in cultural resources management (Roper 1981:151).

As Roper (1981:151) notes, such modeling closely resembles studies of settlement patterns and "consist primarily of a set of correlations between sites and their locations. They are taken as the best initial predictors of occurrences and/or densities of either sites in general or sites of a given type." In an earlier study on archaeological survey and site settlement pattern models, Roper (1979:141) recommends a stratified design, in which stratification is based most efficiently on prior knowledge of the study area.

Prior research in the Harlan County study area indicates a patterning of sites across topographic zones. Three broad topographic zones are recognized: uplands, high terraces, and bottomlands. Archaeological research to date indicates that the highest site density occurs on terraces, followed by uplands, and last by the lowest occurrence in the bottomlands. Most of the sites discovered thus far date to the Plains Woodland and Plains Village periods. The pattern of site frequency across the three zones is generally the same for both periods, although the later Plains Village period indicates a comparatively stronger preference for higher terrace locations. At present, not enough information is available about the other periods to make a general statement about site patterning across these zones.

The emphasis in this sampling procedure was to obtain multiple observations and to ensure reliable results that adhere to guidelines for statistical rigor. Concerning the percentage figure of a sample to determine sample size, particularly as it pertains to archaeological sampling, Read (1975:51) notes that there is "no magic figure" and that adequate sample percentages may range from 1% upwards, depending on the size of the parent population. In the Harlan County Lake project area, a parent population of 5,168 acres lies within the project lands, and a preestablished figure of 10% which the Scope of Work of the Contract had set. Thus, a sample population of about 516 acres is required and must be sampled in such a manner that resulting frequency distributions indicate reliable relationships between the sample statistics and their corresponding population parameters.

Statisticians have set general rules for determing sample size.

Roscoe (1975:184) recommends that sample sizes should not be smaller than 10 if any type of statistical analysis is to be performed and that in cases where the dependent variable is of low reliability, as in site prediction models (cf. Roper 1981), sample size should minimally approximate n = 30 observations. It is a well known axiom of probabilistic sampling theory recognized by anthropological statisticians that a sample mean is a stable and unbiased estimator of the population mean; and, as the sample size (n) approaches the population size (N), the probability that the sample mean differs substantially from the population mean approaches zero (Thomas 1976:181-182). Further, as n approaches N, the differences between the sample variance and population variance also approaches zero. Because the sample mean and sample variance will be used to construct both point and interval estimates of the number of sites expected to be found within the entire project area, multiple observations were required to ensure reliable results. Further, interval estimates can be refined by constructing confidence intervals about the mean, employing the t-distribution, which is more appropriate than the normal distribution for small samples (Roscoe 1975:215-216).

The research area was stratified according to statistical, environmental, and cultural considerations. A 520-acre sample (10.06%) was drawn from the parent population and distributed across the three environmental zones present in the study area: uplands, terrace, and bottomland (Map 2). A stratified random sample of n = 26 was derived for this study based upon statistical, logistical, and archaeological considerations, using a table of statistical random numbers (Wood 1974:286-292). Such a sample size meets statistical requirements of a sample size greater than 10 and approximating 30 observations, as well as being amenable to parametric statistical analyses in conjunction with small sample distributions. Logistically, 26 observations results in a 20-acre sample unit size in which the 5 preselected 20-acre timber tracts can be incorporated into the 26 unit sample without violation of statistical principles; the timber tracts were chosen independently of prehistoric site distribution considerations, and a uniformity of observation unit size was maintained throughout the project area. Further, 20-acre tracts are delineated easily within the configuration of the 640-acre section-quarter section unit of land measure employed in this country. In the event that any of these tracts were inaccessible due to inundation or standing water, several alternative tracts had been selected randomly. These tracts are indicated on the accompanying USGS map (Supplement 1).

The 26 observation units were not uniformly distributed over the project area. The following sample distribution was proposed:

upland/bluff:	100/403 acres = 24.8%;	n_1 = 5 units
terrace:	220/828 acres = 26.6%;	n_2 = 11 units
bottomland:	200/3,937 acres = 5.1%;	n_3 = 10 units
Total	520/5,168 acres = 10.06%;	n = 26 units

This distribution was based upon considerations of site frequency distribution from previous studies in the area.

Spatial placement of observation units within the stratified random sample (illustrated on the accompanying 7.5' topographic map [USGS 1974a], Supplement 1) was constructed independently of prehistoric settlement patterning. By stratifying the entire research area, each of the three topographic zones were sampled, since sites were known to occur in each zone. The selection of random units as opposed to systematically chosen units within each stratum ensured that "patterning" did not occur. Locations of previously recorded sites indicated a relatively homogeneous spacing between sites. This introduced the possibility of biased estimates of site frequency if systematically derived units either had coincided with a disproportionate number of site locations, resulting in inflated estimates, or if systematically placed units should miss sites, resulting in underestimated projections of site frequency. Independent randomly selected units within each strata obviated this possibility.

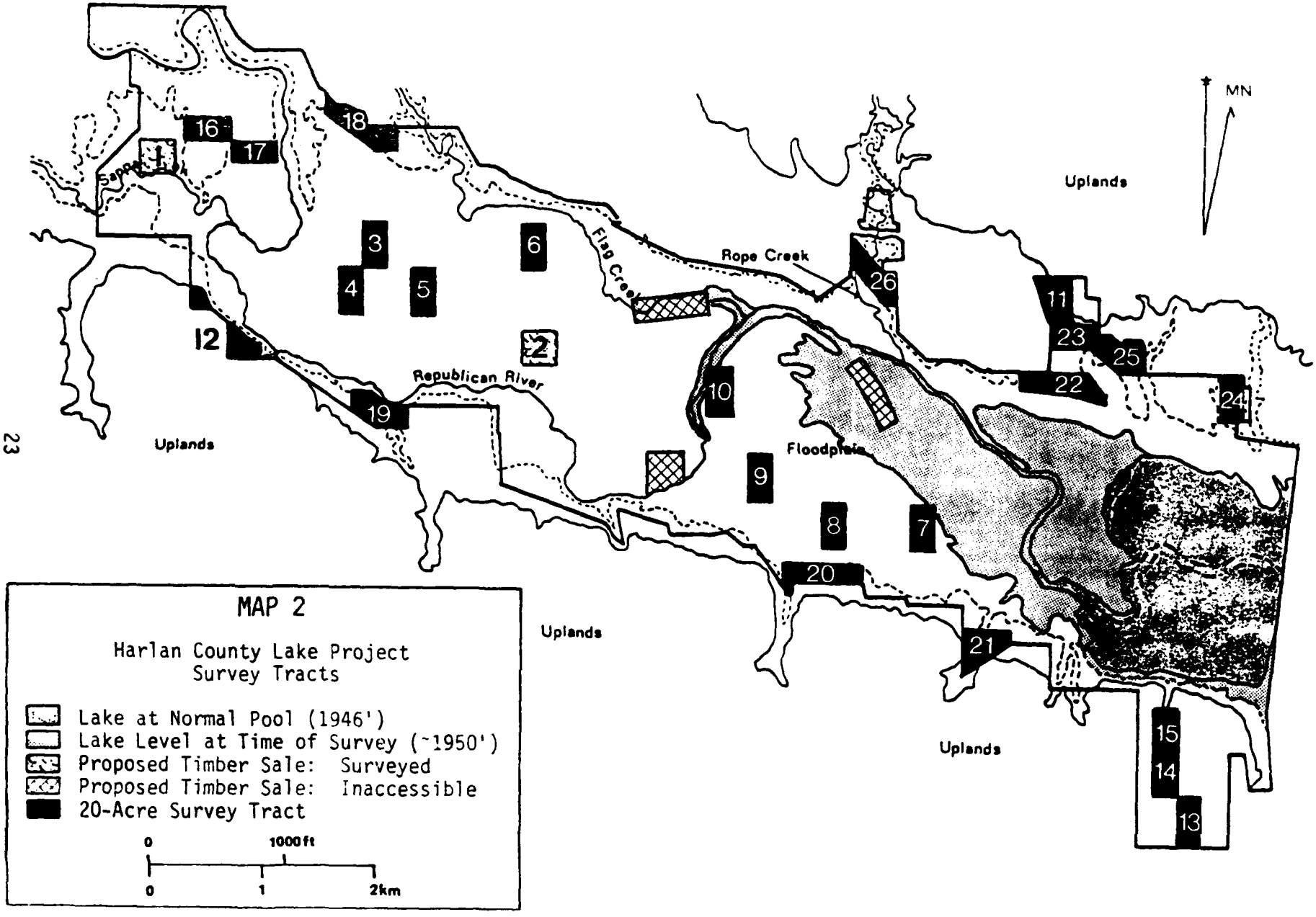
Results of previous research, as indicated on the Alma (Nebraska) 15' minute quadrangle maps (USGS 1974b) provided by the Kansas City Corps of Engineers office, revealed few sites located in bottomland environments in the overall study area. Only 5 or 6 sites could be ascribed to this topographic zone within the 25,092 acres east of U. S. Highway 183; this is approximately 1 site per 4,200 - 5,000 acres of bottomland. In the study area west of Highway 183, there are only 3,937 acres of bottomland of which approximately 660 acres are permanently inundated. The likelihood of there being more than 1 or 2 sites in the entire bottomland/low terrace remnant area is very small. Therefore, a 200-acre (5.1%) sample of this environmental zone was deemed adequate for this stratum. As noted earlier, stratification was based on prior knowledge of the study area (cf. Roper 1979:141). Final projections of potential site frequency in the bottomlands (and the other two strata) were made on the results of survey as expressed statistically in comparison with the results of previous investigations in the Harlan County area. A records check of materials on file at the Midwest Archaeological Center, National Park Service, Lincoln, Nebraska, and the Nebraska State Historical Society revealed no known sites within the entire 5,168 acre project area.

The present knowledge of settlement patterns in south-central Nebraska as revealed by the background and literature review indicates that the highest frequency of sites would occur in the terrace zone, followed by the uplands zone, and, finally, the bottomlands. Therefore, larger, relative sample sizes had been determined for these first two zones: 220 of 828 acres (26.6%) or 11 randomly selected 20-acre tracts from 42 potential terrace tracts and 100 of 403 acres (24.8%) or 5 randomly selected 20-acre upland tracts from 20 potential tracts. Larger relative sample sizes reduce the effects of sample error and estimated sample variance and produce more reliable point and interval estimates of site frequency projections, since these subsample sizes more closely approach the target population than a 10% sample.

Map 2

Survey Tracts

Tract #	Stratum	Comment
1	Bottomland	Proposed Timber Sale
2	Bottomland	Proposed Timber Sale
3	Bottomland	Proposed Timber Sale
4	Bottomland	Alternate for Timber Sale Tract
5	Bottomland	Alternate for Timber Sale Tract
6	Bottomland	
7	Bottomland	Alternate
8	Bottomland	
9	Bottomland	Alternate for Timber Sale Tract
10	Bottomland	
11	Upland	
12	Upland	
13	Upland	
14	Upland	
15	Upland	
16	Terrace	
17	Terrace	
18	Terrace	
19	Terrace	
20	Terrace	
21	Terrace	
22	Terrace	
23	Terrace	
24	Terrace	
25	Terrace	Alternate
26	Terrace	Alternate



MAP 2

Harlan County Lake Project
Survey Tracts

- Lake at Normal Pool (1946')
- Lake Level at Time of Survey (~1950')
- Proposed Timber Sale: Surveyed
- Proposed Timber Sale: Inaccessible
- 20-Acre Survey Tract

0 1000 ft
0 1 2km

It is concluded that this stratified random sample based on multiple observations of a 10% sample resulted in a more reliable predictive statement of cultural resources to be expected throughout the study area than has been achieved in previous research. Further, such a sampling design allowed for the formulation of research questions to be examined during this study; the types and quantities of data necessary to address the questions were recovered.

Research Questions

In its broadest sense, archaeological research focuses on how populations adapted to their particular environments and how the resulting cultural complexes changed through time in response to changing environmental and social conditions. Cultural changes can be inferred from the archaeological record with varying degrees of success through comparative analysis of artifactual remains as manifested by technology, settlement/subsistence systems, human biology, social organization, and ideology. It is acknowledged, however, that an overall rendering of past human organizations cannot be realized due to the limitations of both archaeology and the scope of this project. However, this is not to say that results of this, or any, 10% sample survey are without scientific value. If addressed properly, limited surveys that may rely substantially on data from small or disturbed sites can produce significant results on a variety of selected problems (cf. Talmage et al. 1977). A sample Phase I survey of the various tracts identified in this research design offer some corroborative information on settlement patterns (site locations) and some limited information on technology. Detailed answers to other questions about extinct cultural systems, other than an inventory of cultural/temporal associations represented, cannot be evaluated at this level of effort.

The background and literature search indicated definite patterns of site location for prehistoric aboriginal settlement, particularly for the Woodland and Upper Republican periods. Such a priori knowledge of site occurrence aided in stratification of the sample, allowing for dispersion of sampling units to ensure statistical reliability and allowing all environmental zones to be included in the sample. Although a Phase I survey is necessarily an inventory task, prior knowledge of the area helped guide the field research through the design of general research questions pertaining to site frequency and distribution. Some of the propositions examined include the following:

1. Site frequency, expressed as a function of site density distributions within topographic zones, may be rank ordered in descending order as follows: terraces, uplands, and bottomlands.

2. Distribution of site types will be similar to other parts of the reservoir area which have been studied previously.

3. Approximately 50% of the sites to be found will not produce culturally diagnostic materials.

4. Sites identified as being from the Plains Woodland period and the Upper Republican Aspect of the succeeding Plains Village period will be the predominant culturally/temporally diagnostic sites to be encountered.

At the present level of investigation, such questions were appropriate for a 10% sample survey. It was not expected that a great number of sites were to be found; however, results were compared with previous research in the area. The analytic and comparative evaluations lead to the formulation of specific hypotheses to be incorporated into the plan of intensive survey outlined for the remainder of the study area as required by the scope of services. The results of survey and subsequent analyses also were used to construct a predictive statement for cultural resources in the area.

Whereas, anthropological research designs normally rely on single sample case studies, deemed by statisticians to be the most limited of experimental designs (cf. Campbell and Stanley 1963:67), sample survey - complete survey comparisons, or comparisons between two or more independent samples, extend the bounds of the design. Questions examined at the 10% sample survey level and reexamined at the 100% survey level are analagous to pre-test/post-test designs or may be refined between observations to be compared with other sample results. The use of multiple comparisons strengthens the results of analyses and enhances the reliability of predictive statements arising out of such research. Such a predictive statement becomes not only part of an effective management tool but also can be constructed in the form of a specific hypothesis that may be tested in later research and used in the evaluation of prehistoric settlement patterns in the Harlan County Lake project area and upper Republican River drainage system.

METHODOLOGY

Field Methods

Archaeological field methods that are appropriate for any site survey project are contingent upon two considerations: 1) the particular objectives of the survey and 2) the physiographic diversity of the survey area. In order to operationalize the objectives of the Scope of Work and fulfill considerations of the research design, shovel probing was instituted as the primary field survey method. In addition, several complementary field methods were employed to address these multifaceted considerations. The field methods employed in this survey included 1) informant interviews, 2) ground surface reconnaissance, 3) shovel testing, 4) cutbank planing, 5) soil probing, and 6) test unit excavation. The coverage for this project is designated as a 100% survey within each of 26 20-acre observation units that comprise the 10% sample universe.

Informant Interviews

When it was possible to locate the present tenant of a survey parcel or another individual thought to be knowledgeable about the parcel, that individual was consulted concerning any sites that might be located within or near the tract. This procedure produced excellent results, after an initial hesitancy to talk to us.

Informant interviews led to the discovery or better delineation of 5 of the 10 prehistoric sites encountered. Three of these five sites (25HN72, 25HN73, 25HN74) were off, but adjacent to, Corps of Engineers property and would not have been recorded without informants' data.

Two of the sites (25HN63, 25HN64) would have been discovered anyway, but the nature and extent of these sites would not have been understood fully without informant data. Often, if informants were located after a survey parcel had been investigated, interviews were used to check or corroborate field results. In no instance was there evidence of the crew missing any site known to locals. Instead, the survey crew identified at least four sites unknown to current tenants and former landowners, who, when queried about the results, indicated no prior knowledge of the sites (25HN65, 25HN66, 25HN69, and 25HN70). The former landowner or most recent tenant for the lands around site 25HN71 were not located; therefore, prior knowledge of site 25HN71 by locals could not be assessed.

Ground Surface Reconnaissance

Field reconnaissance was one of the primary methods of site identification and was used in addition to shovel probing in areas of high visibility (e.g., currently cultivated or fallow agricultural fields). Reconnaissance transect intervals coincided with shovel probe transect intervals, as the two methods were used concurrently. Parallel intervals ranged from a maximum of 50 m to smaller intervals determined by visibility or a land form's potential for a site to occur. In areas of poor surface visibility, backdirt piles of rodents (primarily prairie dogs) were inspected visually to augment shovel probing, and erosional washes were inspected to augment cutbank planing.

Visual reconnaissance proved to be very effective. Three new sites (25HN69, 25HN70, 25HN71) unknown to local individuals were spotted visually in areas that were shovel probed. In all three instances, it is believed that these sites would have been overlooked if shovel probing had been the only method relied upon. All were relatively small in areal distribution and of extremely low artifact density.

Shovel Testing

Shovel testing was performed in survey accessible areas of all observation units in order to maximize data recovery and to determine the nature and extent of each site encountered. These shovel tests were dug systematically at varying intervals not exceeding 50 m (maintained by pacing) as specified in the contract's Scope of Work depending upon local surface visibility and physiographic conditions (Figure 2). Intervals between shovel tests were shortened as reduced surface visibility was encountered under conditions ranging from recently plowed/disced fields (optimum visibility), to fields in crop (average visibility), to fields in fallow pasture, and forested areas (fair to poor visibility). Physiographic conditions such as fluvial deposition in floodplains also warranted more closely spaced shovel test intervals. This interval was shortened at the discretion of the supervising field archaeologist in areas designated as having high site potential (e.g., rises on the floodplain or dissected terrace remnants) and reduced further as required (cf. Chartkoff 1978).

Shovel tests consisted of digging a hole approximately 40 cm in diameter to a depth sufficient to observe culturally undisturbed soil. Shovel tests were generally deeper in agricultural fields, being excavated to at least 20 cm into undisturbed deposits. All shovel test backdirt was troweled thoroughly for cultural debris and wall profiles inspected for potential buried or stratified deposits or other indications of cultural activity.

Shovel testing proved to be ineffective in discovering sites or determining horizontal extent of sites encountered. This may be attributed to small site size and, more importantly, low artifact density of sites discovered by visual survey and shovel probed in efforts to ascertain areal extent (cf. Lynch 1980).

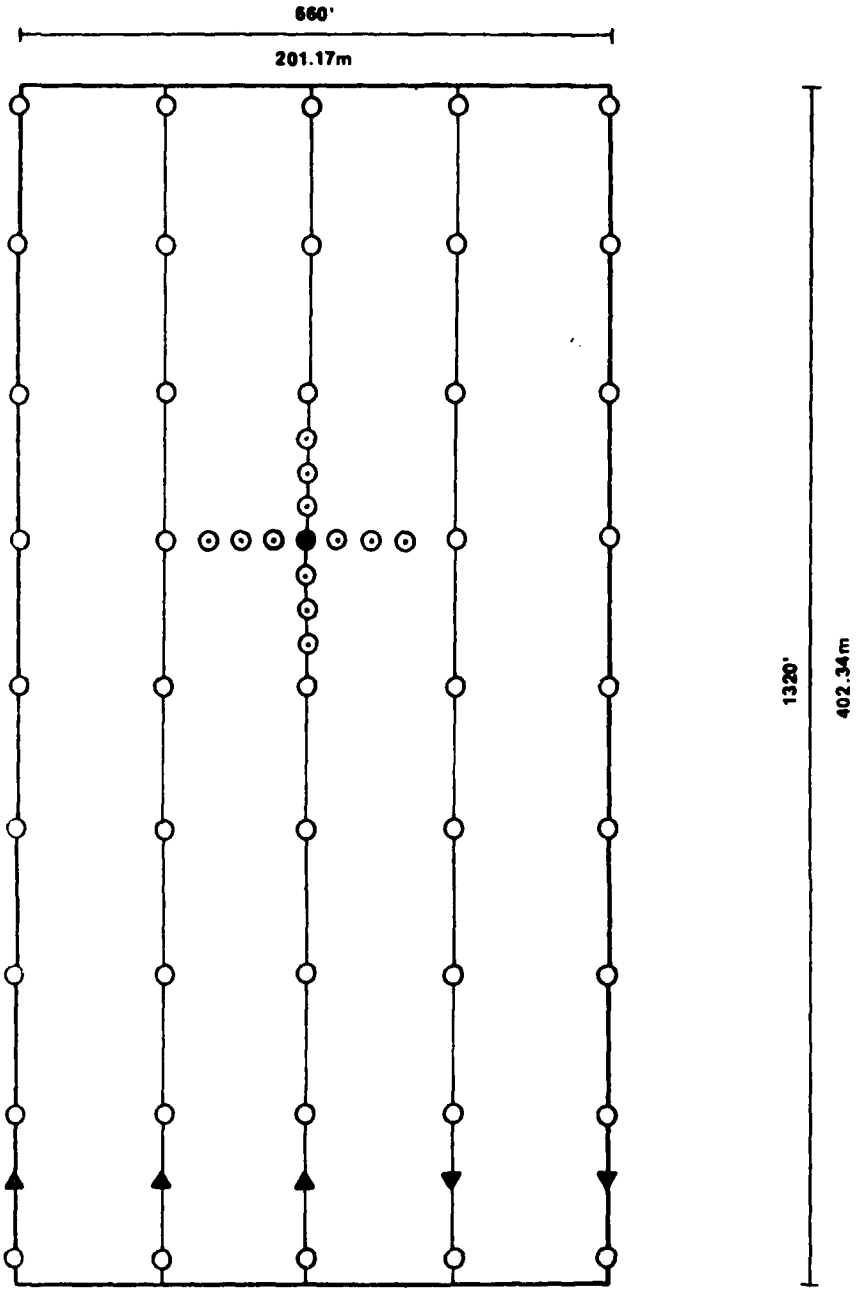
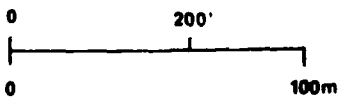


Figure 2. Harlan County Lake Project
Schematic of Shovel Probe Survey Coverage Within
20-Acre Tracts: Interval=50 m (143.6')

○ Negative Shovel Probe
● Positive Shovel Probe
⊙ Additional Shovel Probes at 5-10 m Intervals
| Transect Line



Cutbank Planing

Planing of erosional banks was done utilizing a trowel or a shovel blade. This procedure had been used by previous researchers (e.g., Roetzel et al. 1982:15) in determining whether a site discovered on a beach was in situ or disturbed and in assessing the extent of erosional damage. While no survey parcels investigated had banks caused by wave action, it was useful on steep slopes where erosional banks had formed through slippage of soil. It was helpful in augmenting shovel probes and visual survey, as well as determining if intact subsurface deposits existed at one site (25HN70).

The frequency and placement of cutbank planing was dependent on the occurrence of erosional banks within any given survey parcel. All erosional banks that occurred along shovel probe transects were visually examined, and portions were planed to enhance visibility. The cutbanks and fill formed from the planing activity were examined for the presence of cultural deposits and artifacts.

Soil Core Probing

Soil core probing with a 1 m long, 2.5 cm diameter soil core tool provided a minimal-disturbance technique for sampling and evaluating subsurface stratigraphy or presence of cultural materials. Soil probes were selectively placed in the bottom of shovel test units and test unit excavations as an efficient method of ascertaining subsurface stratigraphy below the extent of such excavation units. The technique was used predominantly in floodplain observation tracts.

Test Unit Excavation

In addition to the above methods, at some sites it was necessary to excavate .5 x .5 m^2 and 1 x 1 m^2 test units in order to adequately ascertain the existence of undisturbed subsurface components. These units were excavated and 1/4 in screened in 10 cm levels to a depth 20 cm below artifact bearing strata. The provenience of all materials and features encountered were recorded and the artifacts retained for analysis. The bottoms of all test unit excavations were cored an additional 50 cm to check for buried midden staining or other evidence of culture bearing strata.

Laboratory and Analytical Methods

Artifact Analysis

All materials recovered through either surface or subsurface investigations were washed and sorted into gross categories (e.g., lithics, ceramics, historic materials) in the field. This was done to maximize field time and to facilitate initial field interpretations of site types to ascertain whether or not subsurface investigations were warranted and, if so, how extensive they were to be. Labeling, cataloging, and analyses were performed at the facilities of American Resources Group, Ltd., in Carbondale, Illinois. An artifact inventory

was compiled of all materials collected. Precise definitions of this nomenclature is presented in the glossary (Appendix A); inventories of materials recovered are presented in Appendix B; detailed discussions of historic artifacts appear in Appendix C. The following artifact classification was employed.

Prehistoric Artifacts:
- Debitage:
  - primary decortication flake
  - secondary decortication flake
  - interior flake
  - shatter with cortex
  - shatter without cortex
  - bifacial thinning flake
  - polished flake
- Retouched debitage
- Utilized debitage
- Cores
- Unifacial tools
- Bifacial tools
- Groundstone tools
- Modified Lithics
- Ceramics:
  - Woodland
  - Upper Republican
  - Protohistoric
  - Historic
  - Other

Historic Euro-American Artifacts:
- Ceramics:
  - stoneware
  - yellowware
  - porcelain
  - earthenware
  - redware
- Glass:
  - 2 piece hinged mold
  - 3 piece hinged mold
  - automatic bottling
  - other
- Metal
- Cinder/Clinker
- Plastic
- Other

Geological/Unmodified Lithic

Faunal

Additional Remarks

Other Analytical Methods

Techniques such as cartographic interpretation of site distribution and statistical analyses were performed at American Resources Group, Ltd., in Carbondale, Illinois. Standard statistical applications relevant to both spatial geography and archaeology were employed.

Curation

All materials recovered as part of this study have been forwarded to the State Historic Preservation Officer, Nebraska State Historical Society, for permanent curation at that facility. Copies of analysis forms and excavation records were included.

RESULTS OF SURVEY

Introduction

Twelve previously unrecorded archaeological sites were recorded during the 1983 season (Map 3). Nine sites were within U. S. government lands, and three sites lie just outside government lands. The 12 sites contain 15 culturally/temporally distinguishable components ranging from Late Paleo-Indian/Early Archaic through the historic period, including a possible historic Indian period component, as well as historic Euro-American postsettlement components (Table 1).

Site 25HN63

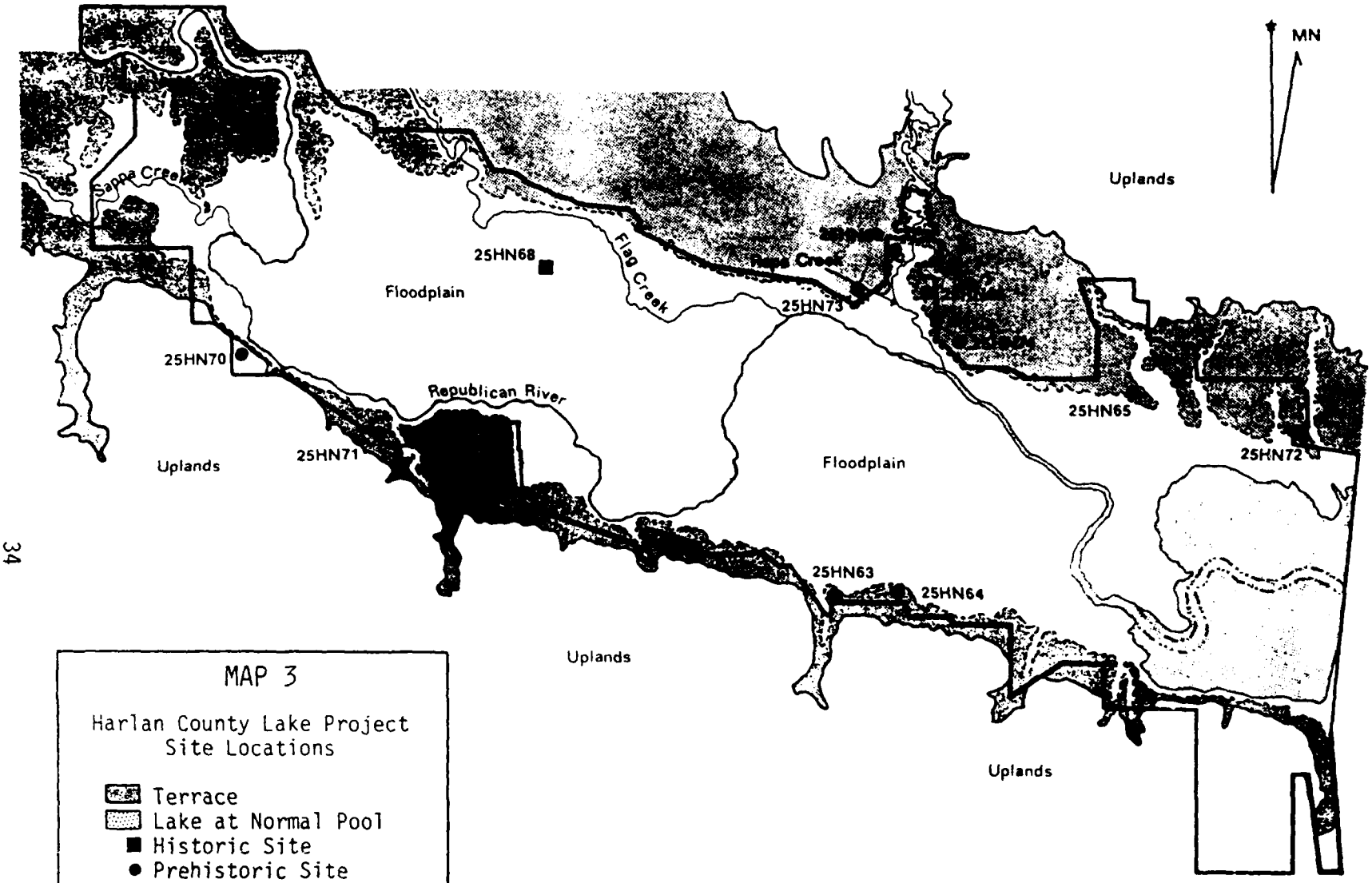
Setting: Site 25HN63 lies on a terrace 3,900 ft (1.2 km) south of the Republican River and is bounded on the west by an intermittent tributary of the river (Map 4). Informant interviews indicated that this intermittent stream once turned east along the northern periphery of the terrace, approximately 600 ft (180 m) north of the site. The runoff from the stream bed has since been diverted to drainage ditches along farm fields. Site 25HN63 lies at an approximate elevation of 1,975 ft. At the time of survey, the immediate site area was a fallow agricultural field.

Field Methods: Site 25HN63 was located by pedestrian survey, revealing a moderately dense scatter of prehistoric lithic and ceramic materials. Site size was defined at 180 m east-west by 80 m north-south. A general surface collection was made; all ceramics were collected, and a selective sample of lithic materials was collected.

Subsurface investigations consisted of excavation of 2 1 m^2 excavation units (Map 4). These units were dug in 10 cm levels, and all fill was screened through 1/4 in hardware mesh screens. Both units were excavated to a depth 20 cm below artifact-bearing levels, which were contained wholly in the plow zone. Cartesian coordinates for the units were derived from an offsite datum (N0E0) established at the northeast concrete abutment of the bridge that crosses the intermittent stream.

Materials Recovered: Quantities and weights of all materials recovered are presented in Appendix B. Of particular note concerning materials recovered are the culturally/temporally diagnostic materials from the Woodland and Upper Republican periods (Plate 1).

Woodland materials were limited to two projectile points (Plate 1K, M). One was made of white chert (Plate 1M) and resembles a side notched, serrated Woodland variety found at the Kelso site (25H023) in



MAP 3

Harlan County Lake Project
Site Locations

- Terrace
- Lake at Normal Pool
- ■ Historic Site
- ● Prehistoric Site

0 1000 ft

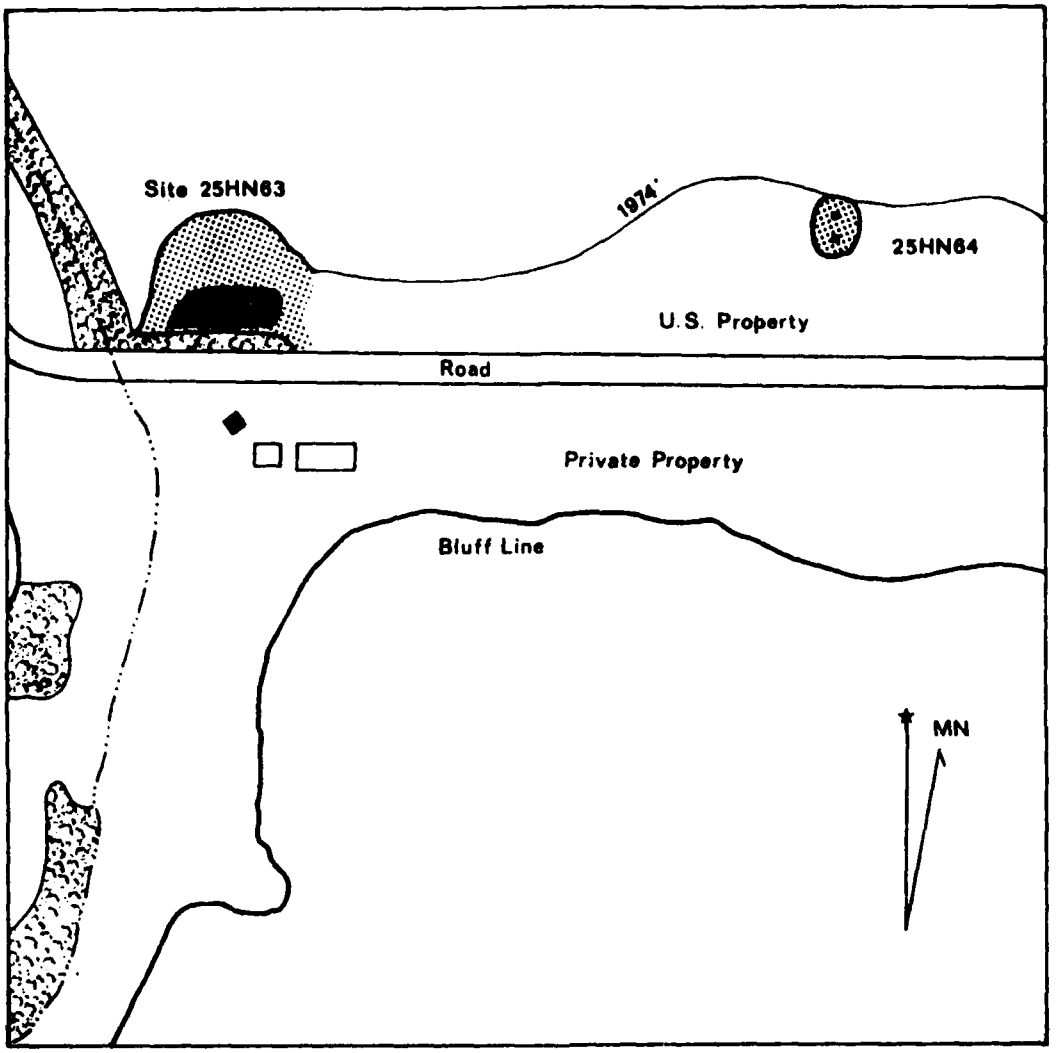
0 1 2km

Table 1

Newly Identified Archaeological Sites Recorded During the 1983 Season

	Late Paleo/ Early Archaic	Woodland	Upper Republican	Proto-historic	Historic Indian	Historic Euro-American
25HN63		X	X			
25HN64		X	X	X		
25HN65			X	*		X
25HN66			*		*	
25HN67						X
25HN68						X
25HN69						
25HN70			X			
25HN71						
25HN72						
25HN73			X			
25HN74	X					
	1	2	6	2	1	3

*Based on data collected by CASA (1983)
No. of sites = 12
No. of components = 15



MAP 4

Harlan County Lake Project
Sites 25HN63, 25HN64

Highest Concentration
Test Excavation Unit

0 250 500 Feet
0 100 200 Meters

Hooker County, Nebraska (cf. Kivett 1952:93). The other (Plate 1K) is also a side notched point made of translucent chalcedony and was recovered from the plow zone in unit N6E50.

Upper Republican materials included a finely made side and basal notched Harrell projectile point (cf. Bell 1958:30-31) recovered from the surface (Plate 1J). Other points of this type (also surface finds) reported from 25HN63 are in the personal collection of Mr. Stuart Drake, the former landowner. Other Upper Republican materials included 79 ceramic sherds from both the plow zone and surface. These consisted of 71 cordmarked body sherds, including 1 basal sherd and a vessel shoulder, and 8 rim sherds, of which 7 were decorated (Plate 1A-H).

Two body sherds not assignable to any given period were found. One had a red slipped interior surface with cordmark extension, and the other was a plain buff color on both surfaces. These may represent variants of late Upper Republican ceramics.

Discussion: Site 25HN63 appears to be a multicomponent site of the Woodland and Plains Village (Upper Republican) traditions. Cultural materials were restricted entirely to the plow zone, and no evidence of intact subsurface features or cultural deposits were encountered.

The Woodland component is represented only by two lithic artifacts. The absence of Woodland ceramics suggests that the occupation was of slight duration, and the component may be interpreted as a temporary campsite.

The Upper Republican component appears to be of a longer term duration, and the presence of ceramic materials and numerous tools warrant its classification as a habitation site. Also indicative of a more sedentary occupation are various stages of lithic reduction from core reduction to blank preparation to finalized tool forms such as projectile points, beveled knives (Plate 1L), and endscrapers (Plate 1N) (see Appendix B). Broken blanks and debitage produced at various stages indicate intentional retouch and/or flake attrition through utilization for use as scrapers.

Informant interviews with Messrs. Jim and Stuart Drake, as well as the distribution of surface materials up to the U. S. property line road to the south, suggest that site 25HN63 extends south to the bluff line, and the portion on government land represents only a fraction of what may have been an Upper Republican village site. Both Jim and Stuart Drake reported having removed the floor of "an earth lodge" approximately 330 ft (100 m) south of the road during construction of a metal quonset hut about 15 years ago. Mr. Stuart Drake has numerous artifacts in his collection, including Upper Republican projectile points, and indicated these had been found on both sides of the road in an area in excess of 1 ha (2.47 acres) on his private land adjacent to what is defined as 25HN63.

As noted previously, no evidence of cultural features, midden staining, or intact cultural deposits was found at 25HN63. It is

possible that if features associated with the Upper Republican occupation still exist they are on privately-owned land closer to the foot slopes, particularly in the unplowed pasture area. Such a supposition is supported by informant supplied information concerning subsurface deposits and is consonant with current data on terrace locations/preferences for Upper Republican sites in the Harlan County Lake area (cf. Pepperl and Falk 1979:16-17; see also Carlson 1971; Kivett 1970; Krause 1969, 1970; and Scott 1973 for discussions of Woodland and Upper Republican settlement patterns in the Central Plains).

Site 25HN64

Setting: Site 25HN64 occupies a portion of the same terrace formation that site 25HN63 occupies at an elevation of approximately 1,975 ft (Map 4). Site 24HN64 is approximately 1,350 ft (410 m) east of 25HN63 and lies in the same fallow agricultural field as that site at a distance of 1 mi (1,500 m) from the Republican River.

Informant interviews indicated that this portion of the terrace formerly had a small rise which has since been leveled for farming. Site 25HN64 occupies the location of the former rise. Site size is estimated at less than 25 m east-west by 50 m north-south.

Field Methods: The location of site 25HN64 was revealed by informant interviews and confirmed by pedestrian survey. Informant interviews also revealed additional information about the site that could not have been discerned from field investigations. The present tenant (and former landowner) stated that when the rise had been leveled approximately 2.5 - 3 ft of soil had been moved, and a circular feature (approximately 10 ft in diameter) containing charcoal and bone had been destroyed. A few pieces of burned bone from a medium to large unguiate were recovered from the site's surface.

A general surface collection was made, and two 0.5 m x 0.5 m test excavation units were placed in the center of the artifact scatter in addition to the 50 m x 50 m shovel probe/transect intervals. The excavation units were dug in 10 cm levels, and all fill was screened through 1/4 in hardware mesh. No radiocarbon or other special samples were collected.

Materials Recovered: Only prehistoric cultural materials (Appendix B) and faunal materials (Appendix D) were recovered from site 25HN64. These materials were predominantly lithic tools and debitage (plates 2 and 3), followed by ceramics (Plate 2) and burned bone in descending order of frequency and weight (Table 2). All materials collected were from the surface with the exception of one endscraper which originated in the plow zone level of excavation unit S69W16.

Culturally/temporally diagnostic materials may represent up to three components. A possible Woodland component is represented by part of a small, corner-notched projectile point (Plate 3K), similar in form to those recovered from the Carmody site (25HK7), a Woodland occupation

Table 2

Frequencies and Weights of Materials by Gross Categories from 25HN64

Class	Frequency	Percent	Weight (g)	Percent
Tools	51	56.0	756.3	80.8
Debitage	22	24.2	109.1	11.7
Ceramics	10	11.0	50.1	5.3
Bone	8	8.8	20.8	2.2
Totals	91	100.0	936.3	100.0

In the Republican River valley east of the project area (cf. Kivett 1952:88, Plate 16A, 2, and 6). An Upper Republican occupation is suggested on the basis of three dark gray, cord-roughened body sherds similar to those found on other Upper Republican sites in the project area (Plate 3H-J), including nearby site 25HN63, located approximately 400 m to the west. These sherds were identified as Upper Republican pottery based on the following observations of attributes similar to Upper Republican ceramics: 1) thin walled; 2) dark gray surface and interior matrix coloration; 3) evidence of cord-roughened surface treatment, although some of the surfaces were partially eroded; 4) sand temper; and 5) morphological similarity to ceramics from other identified Upper Republican sites in the project area. A protohistoric component, perhaps representing the White Rock Aspect (ca. 1500 - 1600), is suggested on the basis of seven buff-colored, sand-tempered sherds (Plate 3A-F), of which three decorated rim sherds exhibit motifs and attributes found in early protohistoric ceramics such as those of the White Rock Aspect (cf. Rusco 1960) and Burkett and Nance ceramic types associated with the early Lower Loup complexes (Dunlevy 1936; cf. Grange 1968).

Discussion: Site 25HN64 appears to be a small, multicomponent site representing Woodland, Upper Republican, and protohistoric occupations. Cultural materials were restricted to the plow zone in a small, roughly ovoid area, and no evidence of intact subsurface features or cultural deposits were encountered. As with site 25HN63, additional information about site 25HN64 was supplied by informants and was of a nature that would not have been obtainable from field investigations.

These Woodland components appear to be tenuous at best, being represented by a single projectile point fragment whose morphology resembles other Woodland points in the Republican River drainage. The absence of Woodland ceramics or features suggests a very brief occupation, and the presence of a tool implies that the site was used as a campsite by Woodland peoples.

The Upper Republican component also appears to be a limited

occupation although the presence of ceramics classifies the component as a habitation site during this period. One other tool, the endscraper, found in one of the excavation units, also may be associated with the Upper Republican occupation, being analogous in shape, manufacture, and material with endscrapers found at sites 25HN63 and 25HN65, both with Upper Republican components.

The protohistoric component is based upon presence of ceramics with attributes found in other early protohistoric complexes, particularly the White Rock Aspect which is represented in the Harlan County lake area at sites 25HN39 and 25HN45. Those sites have been interpreted as bison hunting camps (Rusco 1960:75). Tool types recovered at 25HN64 include numerous utilized flakes, retouched flakes and unifacially worked scrapers, and bifaces, some with edgewear patterns that suggest use as choppers and scrapers. These tool types also were found at sites 25HN39 and 25HN45 (Rusco 1960).

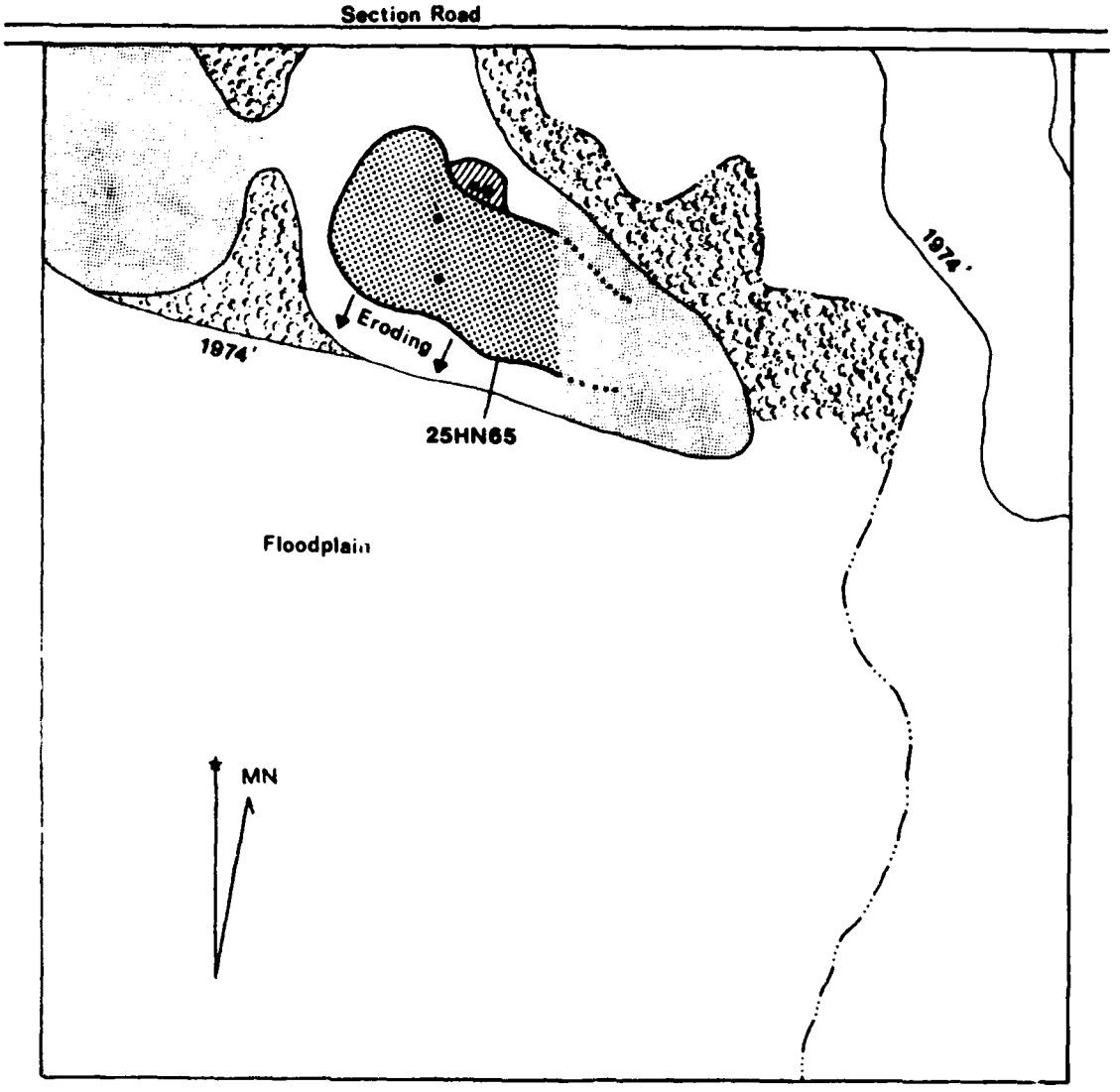
The presence of burned boned from a deer (Odocoileus sp.) and at least one large, but unidentifiable, ungulate (Appendix D) as well as the reported destruction of a large bone and charcoal filled feature at 25HN64 suggests a function similar to that represented at 25HN39 and 25HN45. Whether or not this use is associated with the protohistoric occupation of the site is problematical. While the presence of ceramics connotates use as a habitation site, the limited areal extent of cultural materials, relative paucity of both Upper Republican and protohistoric ceramics in comparison to lithic materials, and indication of possible hunting and butchering and/or animal resource processing argues for interpretation as a campsite.

Site 25HN65

Setting: Site 25HN65 is located on a terrace projection into the Republican River floodplain at an elevation of 1,990 ft (Map 5). The terrace which projects to the southeast is bounded on the east and northeast by an unnamed intermittent tributary creek of the Republican River. The tributary passes within 330 ft (100 m) of the site, and the Republican River passes approximately 2,950 ft (900 m) southwest of the site.

At the time of survey, most of the site was within a fallow agricultural field. Site size was minimally estimated at 75 x 200 m^2. The eastern portion of the site may extend into a grassy area; however, the surface scatter artifacts at this junction were slight, and shovel probes in the grassy area did not produce any artifacts. Subsurface investigations and position of the terrace suggest that part of the deposition sequence and land form may be the result of aeolian deposition of soil from the floodplain. Because of farming practices, the southern slope of the site has been subjected to erosion.

Field Methods: Site 25HN65 was called to the attention of the field crew by other archaeologists working to the southeast of the site (Briscoe 1983). The area of the site (Map 5) was delineated by visual means because of good surface visibility, except for the eastern and



MAP 5

Harlan County Lake Project
Site 25HN65

Site Location
Historic Component
Grass
Test Excavation Unit
Cistern
Pump

0 250 500 Feet
0 100 200 Meters

northern peripheries. Although the area of scatter did not appear to reach north to the road, cutbanks along the road still were examined; no cultural artifact bearing deposits were discovered. The surface scatter became less dense to the east, ending at the boundary between the fallow field and grassy area. The grassy area was shovel probed to the end of the ridge, producing no cultural materials.

A 1 m x 1 m test excavation unit was placed at the highest elevation in the middle of the artifact concentration at S15W20; the datum N0E0 was established at a metal hand pump from the historic component of the site. The unit was expanded to a 1 x 2 m^2 unit as depth increased to a maximum of 172 cm below ground surface. Another (0.5 m x 0.5 m) unit, S65W20, was placed on the south-facing slope to determine the extent of subsurface deposits and effects of erosion due to agricultural activities.

Materials Recovered: Artifacts were recovered from the surface of 25HN65 (plates 4 and 5) and from subsurface deposits in both midden (Plate 4) and feature contexts (Plate 5). Prehistoric lithics and ceramics and historic Euro-American materials were recovered from the surface. Prehistoric lithics, ceramics, bone, and shell were recovered from subsurface deposits. Enumeration of these materials by feature and/or excavation unit level are presented in Appendix B, a description of historic Euro-American artifacts are presented in Appendix C, and a description of faunal remains are presented in Appendix D.

Prehistoric ceramics were the only temporally/culturally diagnostic aboriginal materials recovered from the site (plates 4 and 5). These were restricted to the Upper Republican and White Rock culture: Upper Republican materials were found in surface, midden, and feature contexts; White Rock materials were restricted to the surface. Although lithic materials found included the medial section of a small finely worked projectile point (Plate 4E), it could not be associated firmly with any temporal period via stylistic analysis.

Discussion: During the course of excavating the deeper 1 x 2 m unit, preliminary data on site stratigraphy were gathered. The wall profiles (figures 3, 4, and 5), illustrated in the same figure with feature 1 (Figure 3), reveal at least three distinct artifact bearing strata (deposits A, C, and D).

Site 25HN65 is interpreted as a multicomponent habitation site. The stratigraphic record (figures 3, 4, and 5) indicates five temporally distinct occupations of the site: three Upper Republican occupations, one protohistoric (White Rock Aspect) occupation, and one historic Euro-American occupation. Based upon the presence of ceramics in the three culture-bearing strata, it would appear that the locale always functioned as a habitation site, although of varying intensity through time.

The two most recent aboriginal occupations are represented on the surface and in the plow zone (maximum depth of 29 cm below ground surface), and the collections include both lithics and ceramics (Appendix B). Lithic materials included various types of tools from

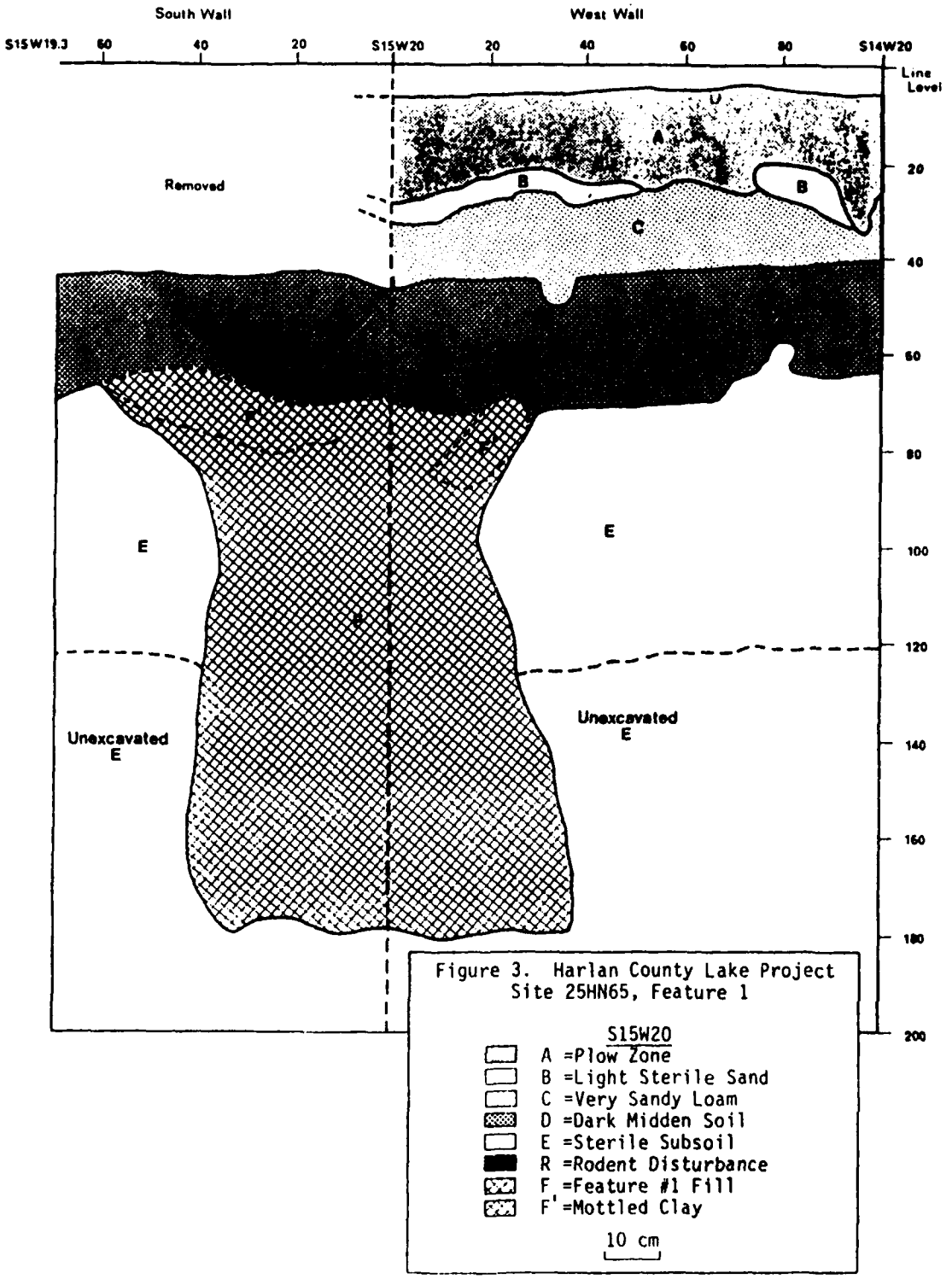


Figure 3. Harlan County Lake Project
Site 25HN65, Feature 1

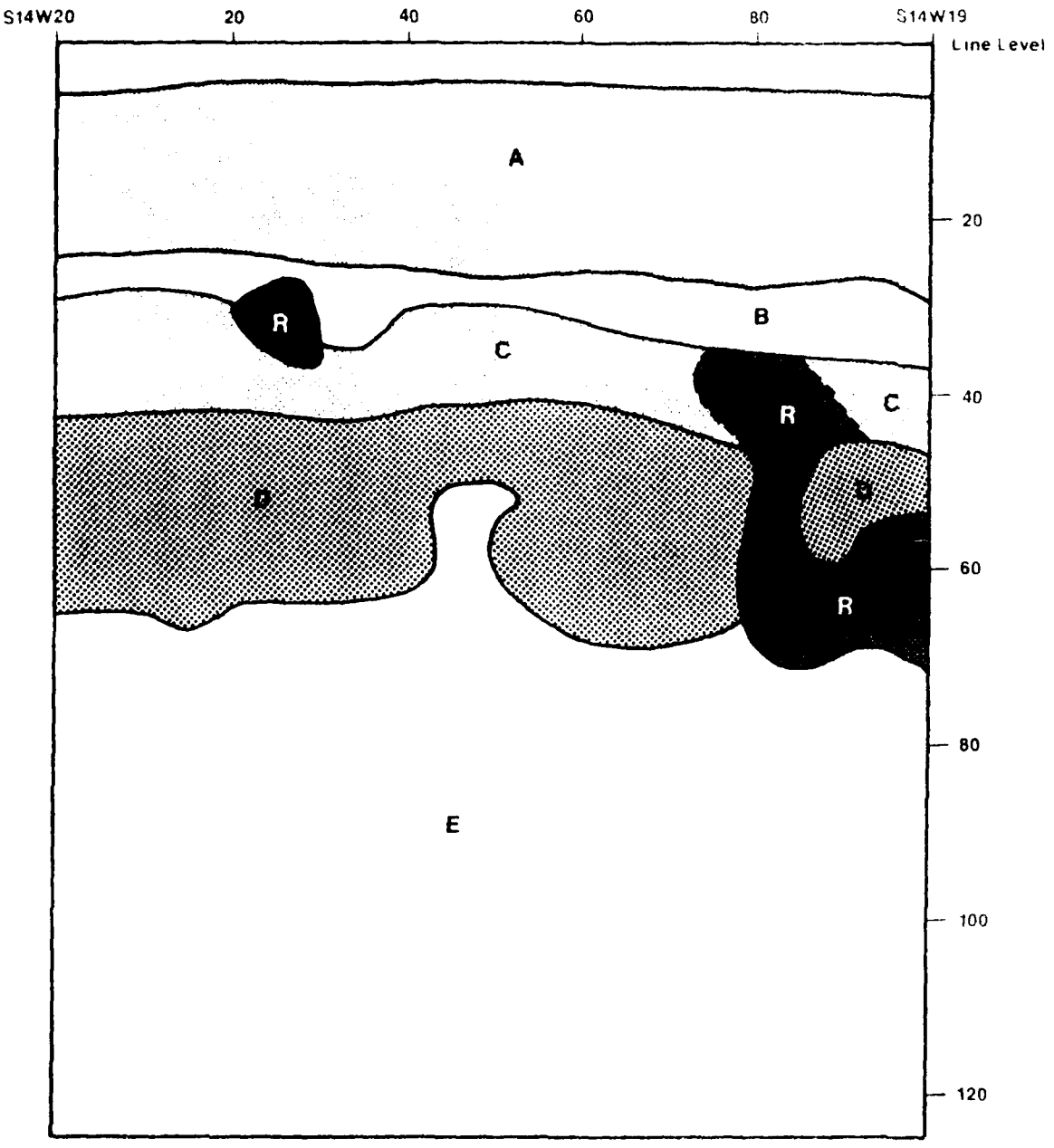


Figure 4. Harlan County Lake Project
Site 25HN65
S15W20
North Wall Profile

A =Plow Zone
B =Light Sterile Sand
C =Very Sandy Loam
D =Dark Midden Soil
E =Sterile Subsoil
R =Rodent Disturbance
F =Feature #1 Fill
F[1]=Mottled Clay

10 cm

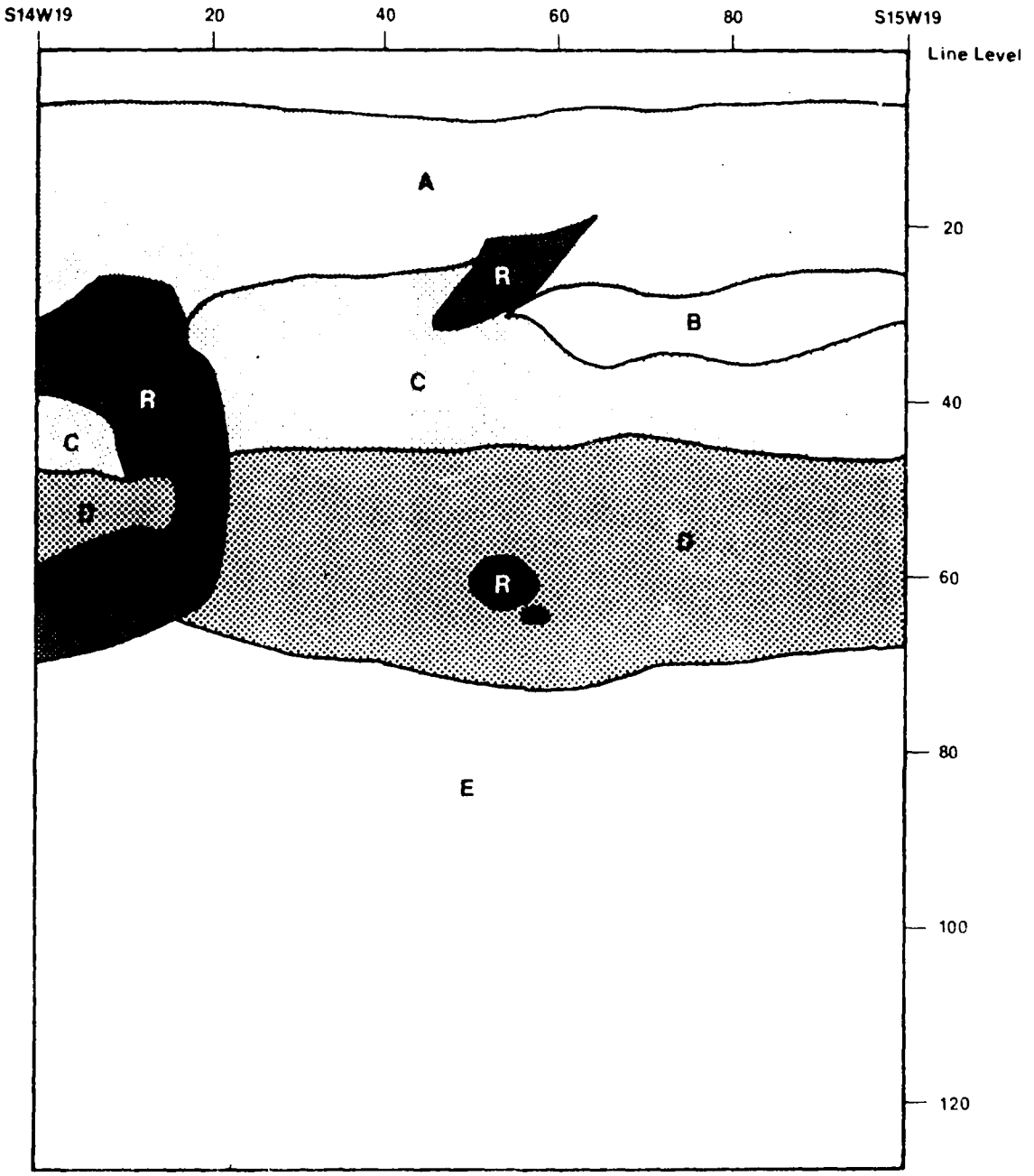


Figure 5. Harlan County Lake Project
Site 25HN65
S15W20
East Wall Profile

- A =Plow Zone
- B =Light Sterile Sand
- C =Very Sandy Loam
- D =Dark Midden Soil
- E =Sterile Subsoil
- R =Rodent Disturbance
- F =Feature #1 Fill
- F[1]=Mottled Clay

10 cm

shaped endscrapers and prepared blanks to simple utilized flakes. Ceramic materials were represented mostly by cord-roughened body sherds (35) and 1 rim sherd. One smooth sherd with a reddish surface was collected from the surface and represents an early protohistoric component referred to as the White Rock Aspect. The rim sherd and one of the body sherds also may be associated with the White Rock component. The remainder of the ceramic materials recovered from the surface are assigned to an Upper Republican occupation.

The surface component (A) is separated from what may be another temporally distinct Upper Republican component by a fine light gray/brown, culturally sterile band of sandy loam. This layer (B) may be discontinuous throughout the site, varying in depth from 29-41 cm below ground surface.

The second level bearing cultural materials (C) is a somewhat darker, but still grayish, fine sandy loam. This level is perhaps the least intensively occupied stratum, yielding very few artifacts and some bone. The darker soil color is likely attributable to organic staining, also indicated by relatively favorable bone preservation conditions; both bird bone, mussel shell fragments, and small mammal bone were recovered (Plate 5J-N; also see Appendix D).

The materials from stratum C (Plate 4E-J) appear to originate in the lower half of the layer (35-41 cm below ground surface) in excavation unit S15W20, near the contact with the midden deposits (D). Materials recovered from this unit contained both lithics and ceramics, including six cord-roughened body sherds and one medial section of a small projectile point. The layer also may be discontinuous as it was not represented in unit S65W20 on the south slope of the terrace.

Stratum D represents a midden layer in excess of 40 cm in thickness, ranging from approximately 40-80 cm below ground surface. It is characterized by a dark brown loam containing prehistoric lithics, ceramics, bone, shell, and flecks of charcoal. Bone preservation is quite good, and bits of small rodent, bird, and large mammal bone were recovered; no human bone was noted in the fill (Appendix D). The bone all appears to have been refuse; neither the bone nor shell recovered exhibited any intentional working or butchering marks.

Stratum D represents the most intensively occupied habitation at the site. Most of the materials were recovered at the 40-60 cm excavation levels. Also, a feature (feature 1) was defined in this interval (Figure 3) at approximately 50-55 cm below ground surface and extending through the midden into culturally sterile subsoil to a maximum depth of 172 cm. This feature contained bone (Appendix D), lithics, and ceramics (Plate 5; Appendix C). Charcoal and bird and deer bone were noted, but there was no evidence that the bone had been worked or burned. The feature was capped by a layer (F') of mottled clay which was relatively devoid of cultural materials with the exception of one crude bifacially worked piece of chert, still exhibiting portions of the cortex. The feature was bell shaped, flaring out to its greatest diameter at approximately 120-125 cm below ground surface.

This feature represents an Upper Republican storage pit that appears to have been reused as a trash pit. No evidence of stored items such as intact ceramic vessels or large quantities of vegetal or faunal remains were recovered.

This midden layer (D) appears to extend over a large portion of the site as interpreted from the limited test excavations. A dark, culture bearing level containing ceramics was defined at depths from 29-39 cm below ground surface in unit S65W20 in the south slope of the site in an area where the soil is eroding downslope.

Few artifacts were recovered below the midden layer (D) when the soil color and texture changed radically to a yellowish brown clay subsoil (E). An Upper Republican ceramic vessel body sherd was the only artifact recovered from the 80-90 cm level (excluding feature 1), and a bifacial thinning flake was recovered from the 90-100 cm level (excluding feature 1). It is possible that these artifacts came from the interface of the feature fill with the subsoil; these artifacts were recovered in the 1/4 in mesh screen, not in situ.

Based on the foregoing discussion, it appears that site 25HN65 represents what may have been an Upper Republican village, particularly with respect to the extensive midden development. Although no evidence of structures was encountered during the limited testing, the presence of a sizable storage/trash pit in the midden fill would indicate some occupation of appreciable duration and high potential for structural features.

The results of the faunal analysis (Appendix D) provides some insight into subsistence, albeit somewhat sketchy. Mammals, fish, birds, and molluscs are represented in the midden and feature fill. Fish are minimally represented (n=1) occurring only in feature 1; this appears surprising since site 25HN65 is located on a terrace near the Republican River. Freshwater mussel remains are more numerous (midden: n=8; feature 1: n=16). These results may say more about feature 1, rather than being representative of the site as a whole, since only one feature was excavated.

Identifiable remains to at least the family level include migratory waterfowl (Anas sp., n=1; Aythya sp., n=1; Anatidae, n=2), one sparrow, jackrabbit, deer (Odocoilius spp., n=2), and various rodents (n=4). The waterfowl are seasonally available during autumn and late winter, whereas the mammals are available on a year-round basis. These data and the presence of a developed midden suggest a year-round, permanent occupation by one of the Upper Republican groups.

The protohistoric occupation appears to represent the least intensive aboriginal occupation of the site. A maximum of three ceramic sherds may be associated with a possible White Rock Aspect habitation. It is also quite probable that some part of the lithic debris recovered from the plow zone and site surface may belong to this occupation; however, much of the archaeological context for this period has been lost through agricultural plowing. Since the presence of ceramics is

often associated with habitation sites in prehistoric settlement models, the limited amount of cultural debris may imply a seasonal or semipermanent occupation of the site.

The historic component of site 25HN65 is quite small and is restricted to the northern periphery of the site (Map 5). Other than a hand pump and a covered cistern, no structural features remain. The area around the pump and cistern was overgrown in weeds. The historic component of the site had been identified earlier by the crew from CASA, who conducted a background records search on the property, the results of which appear in their report (CASA 1983:18). In essence, it does not appear that the historic Euro-American occupation occurred before 1877 and may have ended ca. 1894. Only a small collection of historic artifacts was collected, and none has any maker's marks or temporally identifiable attributes (Appendix C).

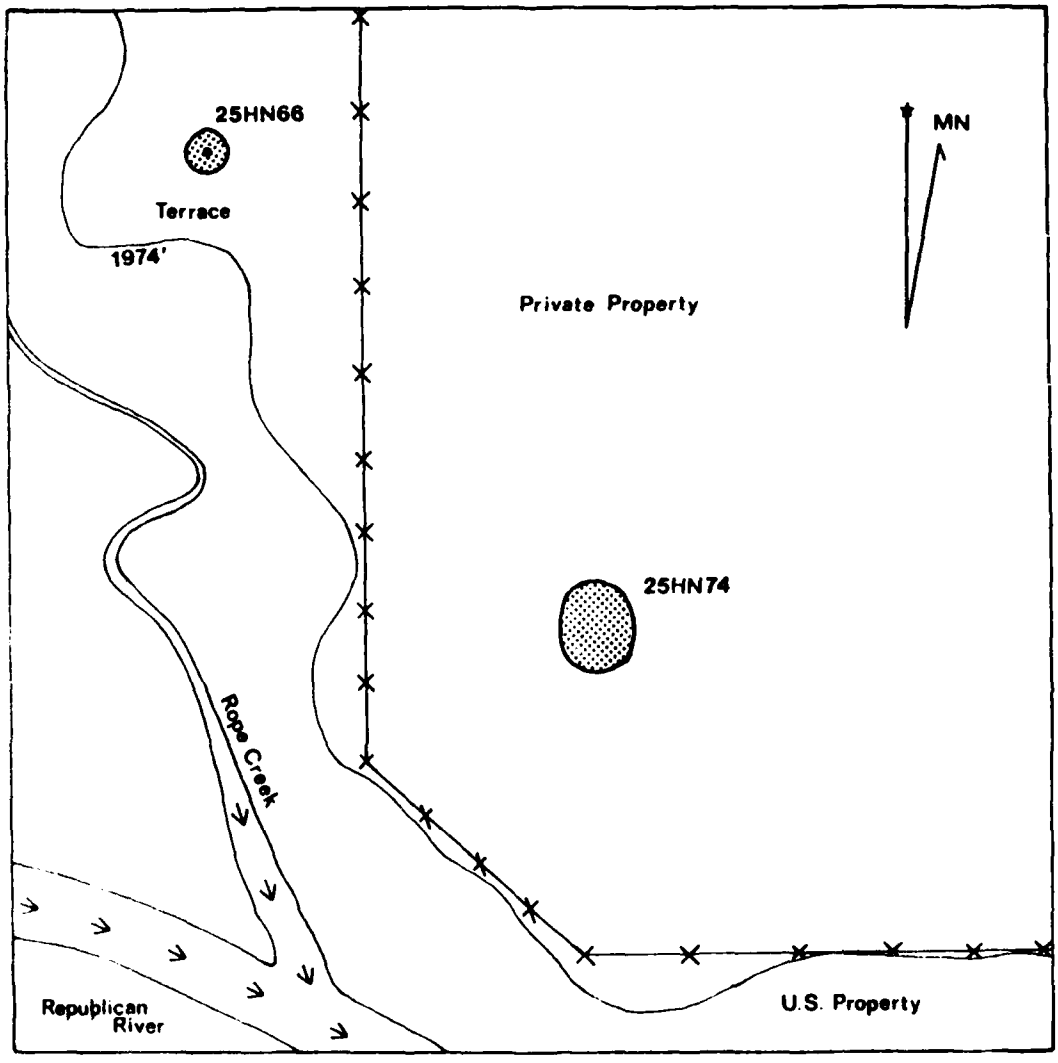
Site 25HN66

Setting: Site 25HN66 occupies a projecting tip of terrace along Rope Creek, approximately 660 ft (200 m) from the water on the east bank (Map 6). It is less than 2,000 ft (610 m) from the confluence of Rope Creek with the Republican River and is situated at an elevation of 1,975 ft. The immediate site area is a relatively flat area planted in wheat at the time of survey; the site had recently been disced prior to rains during the survey.

Field Methods: The location of site 25HN66 was provided to the field crew by other CASA archaeologists (Briscoe 1983) working in a tract of land south of the site. The other crew conducted a limited surface collection and some shovel probing. Site 25HN66 was relocated by visual means from Briscoe's field information, although most of the survey tract (which also contains 25HN69) was examined via shovel probing. Site area was estimated in the field at approximately 30 m x 30 m with some prior slope wash of materials downslope to the west. Subsequent information supplied by CASA (1983:19) places site dimensions at 40 m x 30 m.

In addition to a surface collection of all visible artifacts, 1 0.5 m x 0.5 m test excavation unit was dug in 10 cm levels. While the few materials collected did not seem to warrant subsurface investigation, materials previously collected by the CASA archaeological crew included a steel projectile point and a musket flint, both attributed to mid- or late eighteenth century French origin (CASA 1983:19). These reported surface finds suggested that the site may be of potential significance if intact deposits were present.

Materials Collected: Only prehistoric lithic materials (Appendix B) were recovered in addition to the historic materials reported by Briscoe. Six pieces of debitage, one core, and two minor tools were collected from the surface. One projectile point tip (near the surface) and one piece of debitage were retrieved from the plow zone of the excavation unit. CASA (1983:19) reported collecting a single Upper



MAP 6

Harlan County Lake Project
Sites 25HN66, 25HN74

• Test Excavation Unit

0 250 500 Feet

0 100 200 Meters

Republican ceramic sherd from the surface of site 25HN66. No features, midden staining, or other intact cultural deposits were encountered.

Discussion: Based upon artifacts recovered by both archaeological crews, site 25HN66 can be interpreted as a temporary campsite. Materials collected by Briscoe indicate a historic period (ca. 1750 - 1876) Indian occupation of the site, most likely early Pawnee of the late 1700s, or visitation by French explorers or trappers and a very limited Upper Republican occupation. Prior to the 1983 field season, only one historic period site (25HN16) had been recorded for the Harlan County Lake area (Falk and Thiessen 1972).

Site 25HN67

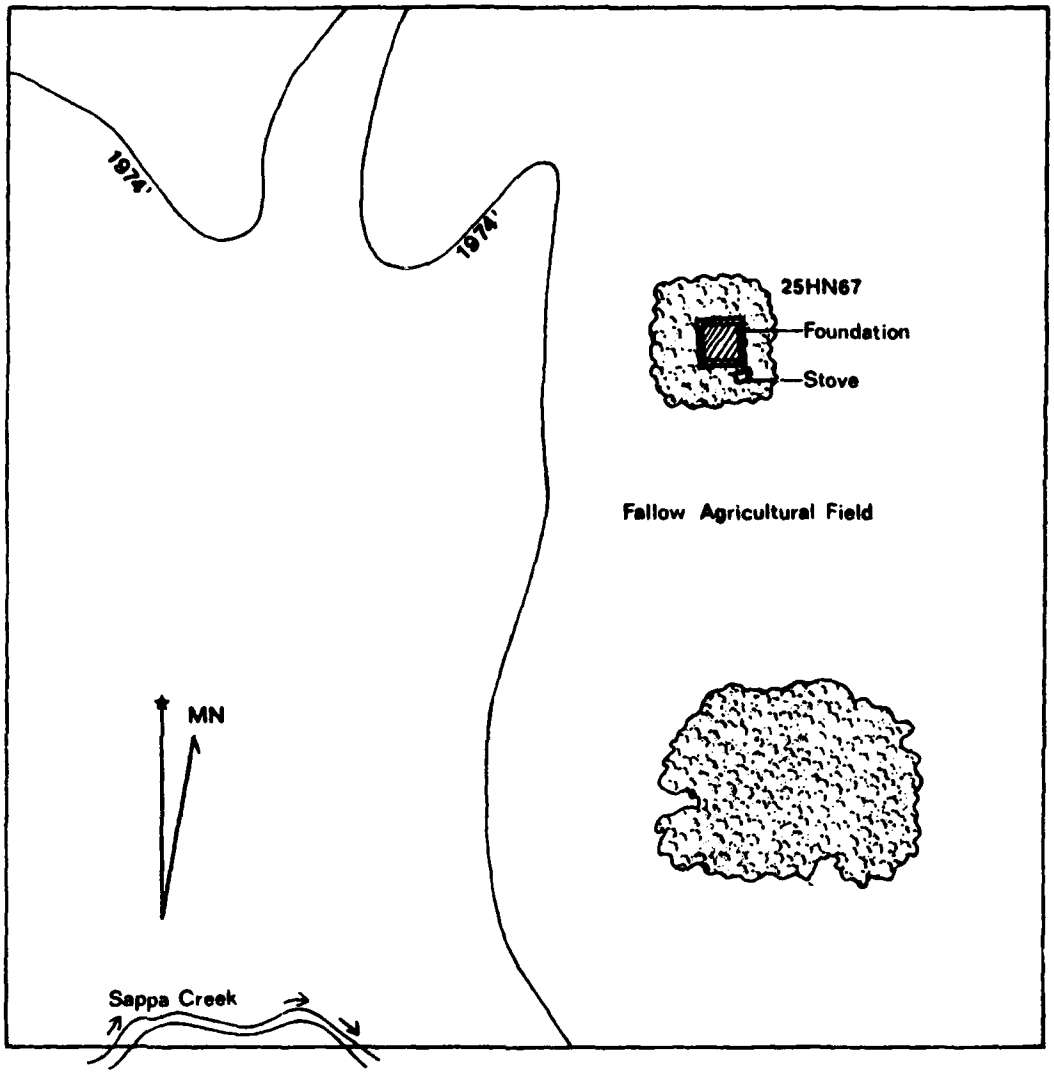
Setting: Site 25HN67 is located in the western portion of the project area on land belonging to the Corps of Engineers. The site occupies a flat, low lying terrace projection between the confluence of Sappa Creek, approximately 2,000 ft (609.6 m) to the south, and the Republican River, approximately 2,500 ft (762 m) to the east (Map 7). Physical relief is negligible, with a slope of less than 1% and an approximate elevation of 1,975 ft, barely above the maximum flood pool level. The immediate area of the site is overgrown and wooded, representing an old farmstead approximately 25 m x 25 m in area. The rest of the survey tract is a fallow agricultural field.

Field Methods: Site 25HN67 was discovered during shovel probe investigations of one of the survey tracts in the random sample. The wooded area within the agricultural field appeared to be a likely place for a former farmstead and was given particular attention by the field crew in addition to the 50 x 50 m shovel probe/transect interval. Visual inspection revealed an overgrown rise with a depression in the middle. Shovel probes along the rise revealed the remains of a brick and mortar structural foundation.

Materials Recovered: No artifacts were collected from the site; materials were noted and left in situ. These materials consisted of sections of brick and mortar, either part of the foundation or perhaps part of the (former) basement walls; the homogeneous redware matrix of the brick suggests a post-1900 date of construction. Also, the remains of a corroded cast iron, wood burning stove, probably dating to the 1920s, were noted and photographed.

Discussion: No intact structural remains of the house exist. The brick and stove suggest a post-1900 occupation, and a brief interview with an unnamed worker of the present tenant, Mrs. Harry Cramer, confirms that the site was destroyed in the 1935 flood. A records search revealed that a Mr. Harry Cramer was the former owner of the property.

Site 25HN67 is typical of many historic post-1900 sites in the Midwest and Plains. The only structural remains are foundations surrounded by a wooded immediate environment, representing an overgrown yard. Site 25HN67 is of no historical or archaeological significance.



MAP 7

Harlan County Lake Project
Site 25HN67

0 250 500 Feet

0 100 200 Meters

Site 25HN68

Setting: Site 25HN68 is scattered over part of an agricultural field in the floodplain of the Republican River. The scatter of historic debris lies approximately 1,600 ft (487.68 m) south of Flag Creek, which occupies the pre-1935 channel of the Republican River (Map 8). The area is flat with a slope of less than 1% and is situated at an elevation of 1,970 ft. At the time of survey, the area was planted in wheat. The debris was scattered with varying density over a 5-10 acre area.

Field Methods: Site 25HN68 was noted by visual inspection during the course of shovel probing along 50 x 50 m intervals within a floodplain survey tract. Shovel probes within the area of scatter indicated that the debris was restricted to the plow zone, particularly in sandy areas. An interview, conducted at a later date with Mr. Thomas Ralston (Orleans), indicated that the materials were flood-redeposited debris.

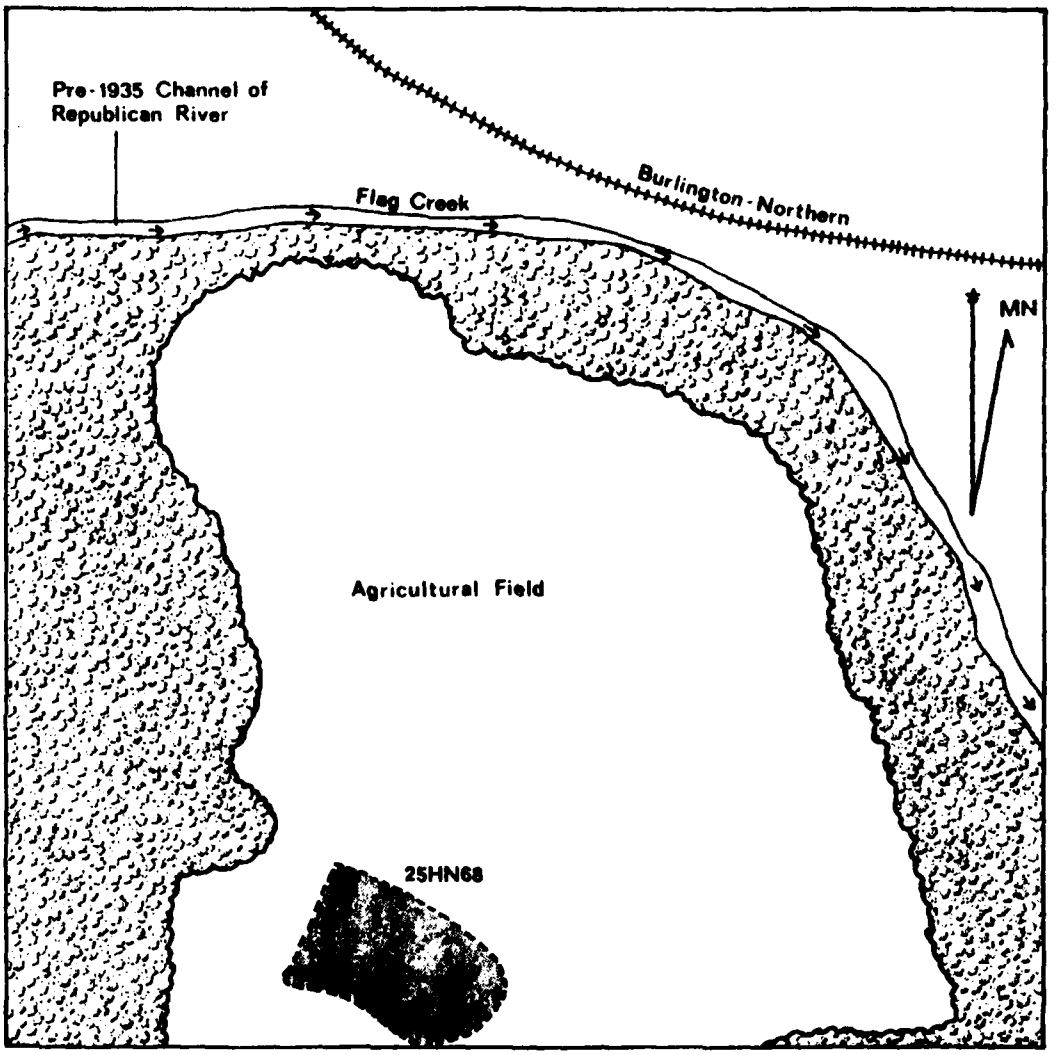
Materials Recovered: Cultural materials recovered consisted entirely of historic debris including metal, ceramics, and glass (Appendix B). Detailed descriptions of the materials recovered are presented in Appendix C. While materials and stylistic types represent artifacts made as early as the 1860s and 1870s, the most recent debris types include ceramics from the 1920s and 1930s and Depression Ware glass which date to the early 1930s.

Discussion: A search of local records did not indicate any previous structures in the area. The interview with Mr. Ralston suggests that the debris is most likely associated with the former Ralston residence formerly located approximately 3/4 mi to west. The farmstead was destroyed in the 1935 flood, being torn from its foundations and floating towards the vicinity of 25HN68, breaking apart less than 1/4 mi from the area of scatter. Mr. Ralston rode the roof of the house downstream until the house broke up, then he spent many hours in a tree until rescued. Mr. Ralston stated that the house was built in 1931; artifacts associated with site 25HN68 date no later than the early 1930s.

While site 25HN68 is of little scientific value in terms of depositional integrity, the incident of the 1935 flood is of historical significance, particularly with regard to Mr. Ralston's personal account of surviving a flood which claimed 25 lives between McCook and Republican City, Nebraska. Mr. Ralston's personal collection of numerous local and regional newspaper accounts, plus first-hand experience of the flood, constitutes a valuable historical resource of one of the region's most important historical events.

Site 25HN69

Setting: Site 25HN69 occupies a small terrace projection bounded by Rope Creek (Map 9), approximately 400 ft (120 m) to the southeast. The Republican River lies approximately 2,440 ft (740 m) to the

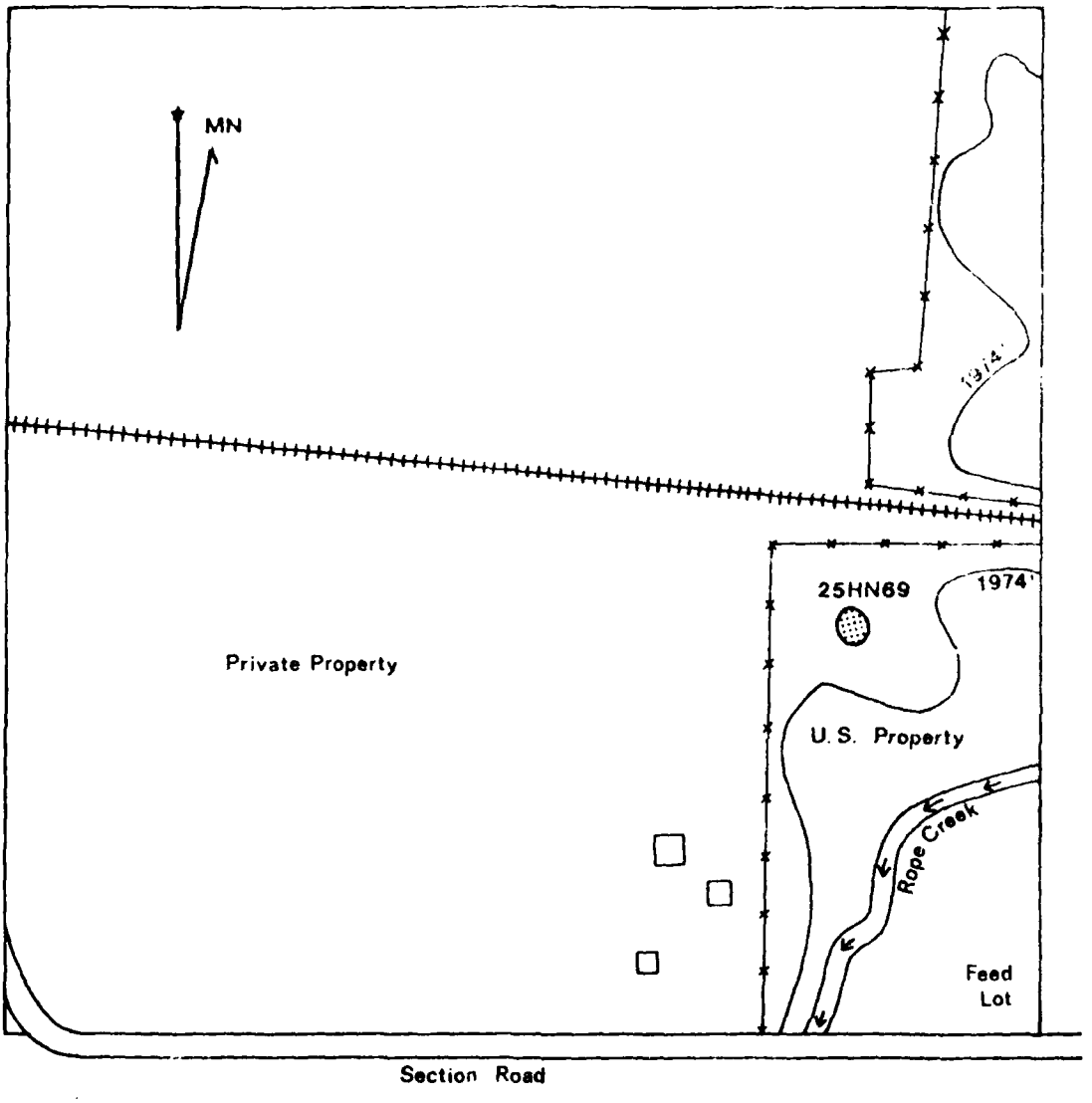


MAP 8

Harlan County Lake Project
Site 25HN68

0 250 500 Feet

0 100 200 Meters



MAP 9

Harlan County Lake Project
Site 25HN69

0 250 500 Feet

0 100 200 Meters

southwest, joining Rope Creek south of the site. Elevation of the site is 1,900 ft, about 45 ft above the course of the river. The immediate area of the site was overgrown with short prairie grass and is used as a feedlot.

Field Methods: Artifacts associated with site 25HN69 were discovered by visual survey during the course of conducting shovel probes along 50 m x 50 m shovel probe/transect intervals. As noted earlier in the Field Methods section of the Research Design, bare spots and animal backdirt piles were inspected for cultural materials; one piece of debitage was found on the surface of an anthill. The area around the find spot was shovel probed at 5 m intervals, but no additional materials were recovered in shovel probes. One more piece of debitage was recovered from the surface. Site size was not estimable with only two pieces of cultural material being recovered.

Materials Recovered: A total of two pieces of debitage was recovered from the site (Appendix B): one primary decortication flake of Ogalla chert and one piece of shatter with cortex of Republican River jasper (chert).

Discussion: Site 25HN69 represents a small lithic scatter of undetermined cultural affiliation. Its proximity to site 25HN73 (1,450 ft or 440 m), an Upper Republican habitation site, suggests the possibility that 25HN69 may be related to that site. This proposition was not investigated since the intervening stretch of land lies on private property and outside the realm of investigations per the scope of work.

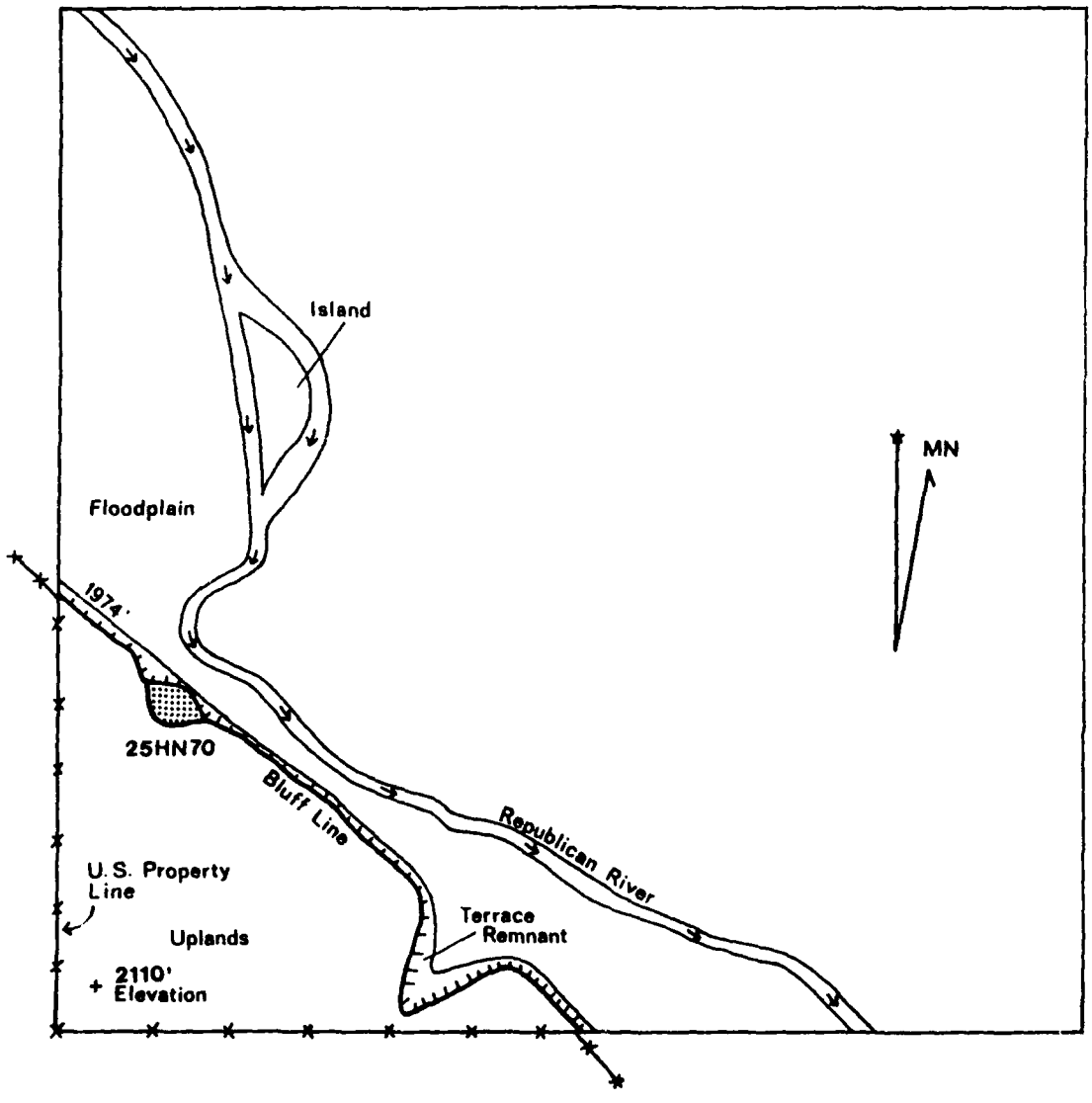
Shovel probes yielded no evidence of subsurface cultural deposits and yielded no cultural artifacts. Further investigations are not recommended for site 25HN69.

Site 25HN70

Setting: Site 25HN70 is located on the edge of the bluff line along the south bank of the Republican River, less than 150 ft (45 m) from the water's edge (Map 10). The topography is extremely dissected, with slope exceeding 30 - 50% grades on the northern perimeter of the site. Elevation is variable, with cultural materials being found from approximately 2,000 ft to 2,030 ft along an estimated 50 m x 15 m strip parallel with the bluff line.

The immediate site area supports prairie grass growth, while the adjacent floodplain supports forest cover. The Republican River is the nearest source of permanent water, and a bend in the river's course is cutting into the bluff line where the site is located.

Field Methods: Site 25HN70 was discovered immediately upon entering the survey tract from the adjacent floodplain. Cultural materials were noted in an erosional gully used by the crew to gain access to the survey tract. Bits of pottery had been carried by slope wash to the base of the bluff. All materials recovered were obtained



MAP 10

Harlan County Lake Project
Site 25HN70

0 250 500 Feet

0 100 200 Meters

through general surface collection. Erosional cutbanks were planed with shovels and trowels; no midden or other cultural evidence was obtained by this technique. Shovel probes at 10 m intervals in relatively flat areas also produced negative results. A remnant of terrace bank to the southeast of the site also was examined for cultural materials.

Materials Recovered: Both prehistoric ceramic and lithic materials were recovered from site 25HN70 (Appendix B). The pottery fragments appear to represent an Upper Republican occupation, although the surfaces are badly eroded from long exposure to the elements. The five ceramic body sherds (Plate 6D-H) recovered are thin walled and grit tempered with a dark gray matrix, attributes isomorphic with other Upper Republican ceramics found in the Republican River drainage. Lithic artifacts recovered include tools, cores, and debitage.

Discussion: Site 25HN70 may be classified as an Upper Republican habitation site. Length and intensity of occupation cannot be determined because of the severe erosion of the site and relatively few materials recovered. The absence of features or midden staining in the remaining portion of the site suggests a short term habitation, perhaps of seasonal duration.

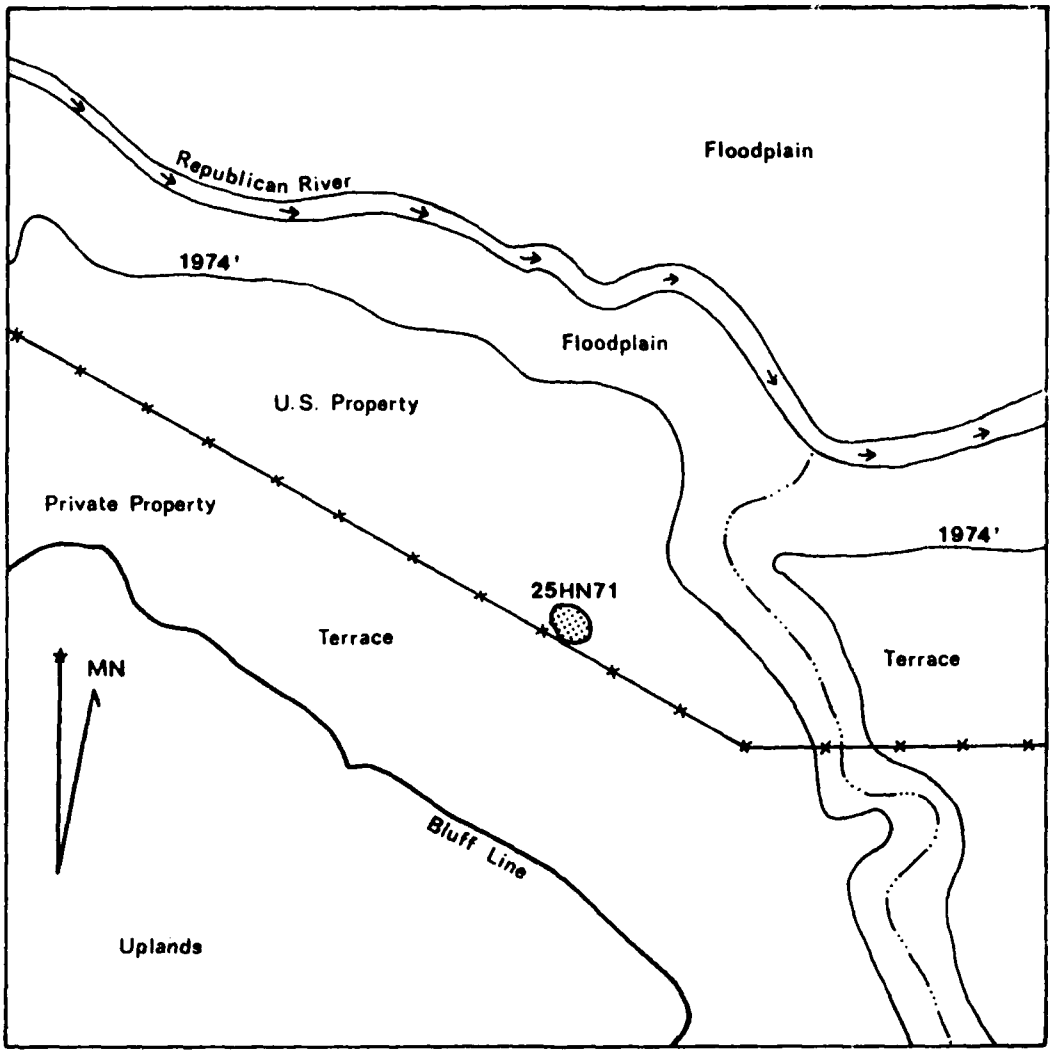
Activities represented by materials recovered at the site include food preparation/processing, tool manufacturing, and local resource exploitation of an undetermined character. Food preparation/processing, represented by ceramic materials, would be required at any habitation site of appreciable duration. The presence of two cores, tools, and debitage of locally available Republican River jasper (chert) indicates some limited tool manufacturing; one fragment of a bifacially worked blank (Plate 6B), representing an intermediate stage of manufacturing, was recovered.

Tool morphology and edge wear attributes indicated the use of one uniface and two utilized flakes as scrapers and of the other uniface and one crude biface for chopping activities. No faunal or botanical remains were recovered to provide more specific details as to how these tools were utilized in resource exploitation.

Site 25HN70 was the only prehistoric site recovered in an upland context. Such a location is not typical of Upper Republican habitation sites, where the modal locational preference is for terrace locales (cf. Carlson 1971; Krause 1969, 1970; and specifically Pepperl and Falk 1979:16-17 for the Harlan County area). The few upland Upper Republican sites found to date in the greater project area indicate use of the uplands for burial purposes (Pepperl and Falk 1979:17). Evidence for such activities was not recovered from site 25HN70. All evidence suggests a short duration habitation site.

Site 25HN71

Setting: Site 25HN71 occupies a portion of a terrace along the south bank of the Republican River at an elevation of approximately 1,985 ft (Map 11). It is located approximately 860 ft (260 m) southwest



MAP 11

Harlan County Lake Project
Site 25HN71

0 250 500 Feet

0 100 200 Meters

of the confluence of the Republican River with an unnamed intermittent tributary stream which meanders within 530 ft (160 m) of the site. The terrace and site area is relatively flat, but the terrace drops precipitously to the forested floodplain about 150 ft (40 m) to the north. At the time of survey, the area was a fallow corn field.

Field Methods: Site 25HN71 was discerned from surface materials discovered during the course of 50 m x 50 m transect/shovel probe intervals. The immediate area around the find spot was shovel probed for cultural materials at 5 m intervals; all shovel probes produced negative results. The area around the find spot which lies on privately owned land was visually inspected for cultural materials but not subjected to subsurface investigations; no additional materials were encountered.

Materials Recovered: Cultural materials recovered (Appendix B) were limited to two tools and one piece of shatter, all composed of Republican River jasper (chert). One tool was a fragment of bifacially worked chert, possibly part of larger bifacially worked tool. The other tool is a small uniface with some edge wear indicating use as a scraper.

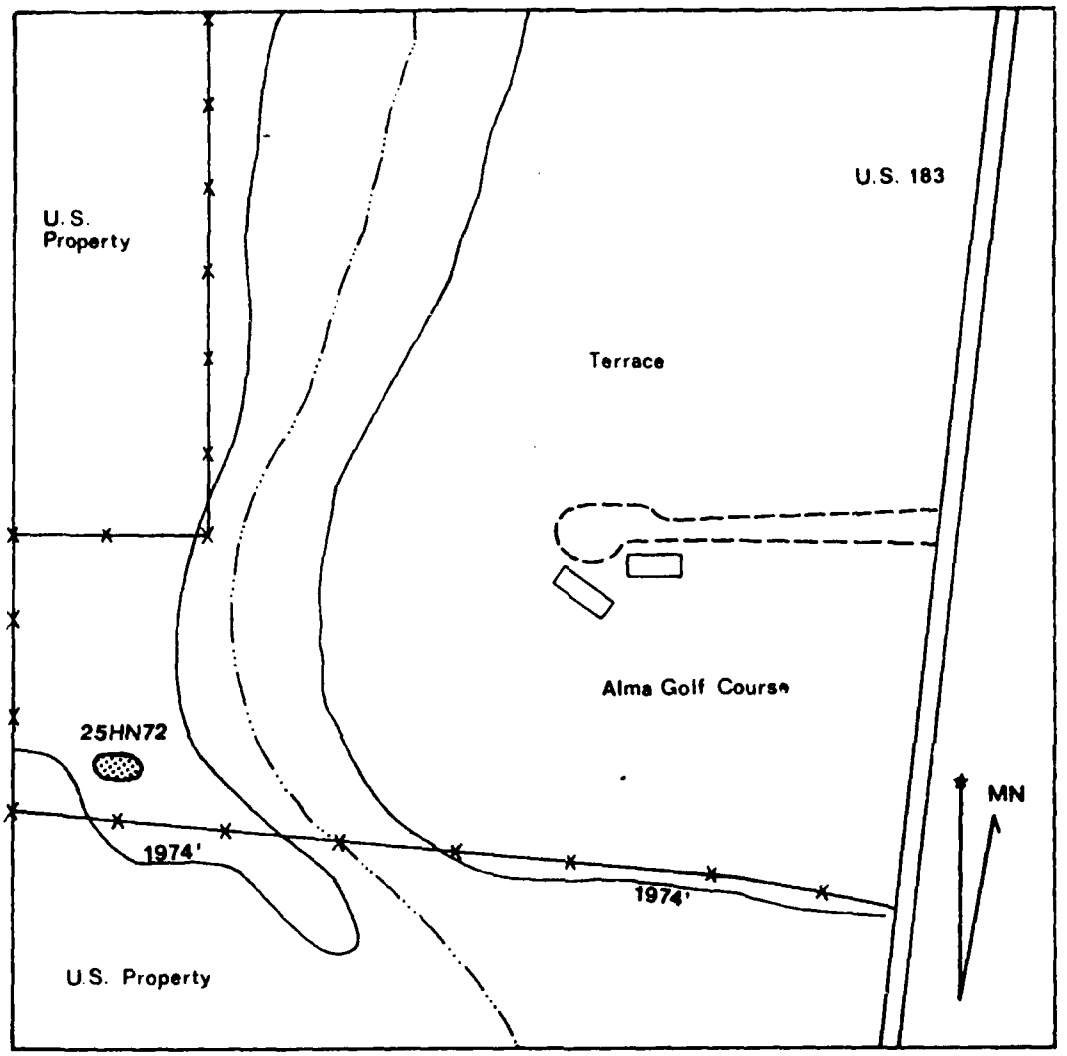
Discussion: Site 25HN71 can be classified as a small lithic scatter of undetermined cultural/temporal affiliation. The relatively few cultural materials recovered do not allow for specific inferences to be made about site function, although the presence of tools suggests the site's use as a limited activity locale. It is possible, although presently undetermined, that additional materials may lie on the privately-owned land to the south of the site, near the junction of the terrace with the bluff line.

Site 25HN72

Setting: Site 25HN72 is located within the confines of the Alma Golf Course, within 100 m of the U. S. government property line (Map 12). The site occupies a small portion of terrace remnant extending south into the Republican River floodplain at an elevation of 1,980 ft. The terrace is flanked by a south flowing unnamed intermittent tributary to the river on the east and a small draw to the west. At the time of survey, the site was covered in grass.

Field Methods: Site 25HN72 was discovered through an unnamed informant who regularly plays golf at the Alma course. When asked of his knowledge of sites near or on government property which abut the golf course, the informant indicated that a lithic scatter was on a terrace projection near the property line. The site was investigated via visual pedestrian survey, revealing a small lithic scatter. Site size was inestimable due to grass cover; however, the informant indicated an area approximately 25 x 25 m^2, which he said was more visible during late summer months when the grass cover had thinned. Since site 25HN72 lies on private property and outside the area covered in the scope of work, no subsurface investigations were conducted.

Materials Recovered: Surface materials recovered consisted of one



MAP 12

Harlan County Lake Project
Site 25HN72

0 250 500 Feet

0 100 200 Meters

piece of lithic shatter and one bifacial thinning flake (Appendix B). The informant indicated that under more favorable conditions, other flakes were visible; to his knowledge no one had ever retrieved ceramic material, projectile points, or other culturally/temporally diagnostic materials from the site.

Discussion: While the materials recovered from the site are inconsequential regarding site interpretation, the location of the site is important with regard to topographic situation. As with other prehistoric sites discovered during this survey and prior surveys (cf. Pepperl and Falk 1979; Roetzel et al. 1982), the site location fits a consistent pattern of location on a terrace edge or projection into the floodplain.

Cultural or temporal affiliation could not be assigned to site 25HN72 due to the absence of diagnostic materials collected by the survey party or reported by informants. Based upon informant supplied data and the small collection, site 25HN72 may be interpreted as representing no more than a temporary campsite of undetermined function.

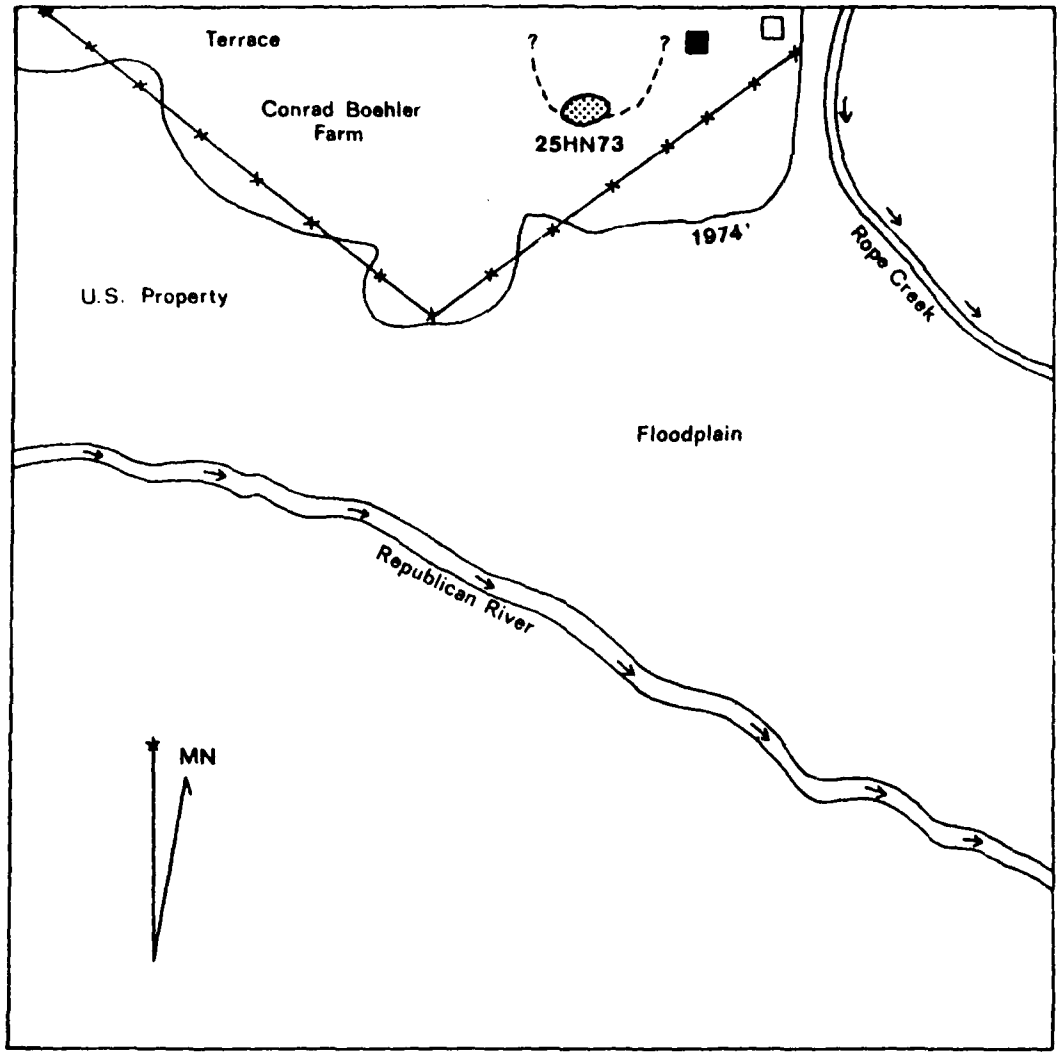
Site 25HN73

Setting: Site 25HN73 lies on privately-owned property adjacent to the U. S. government property line (Map 13). It is situated on a broad terrace projection approximately 800 m (.5 mi) upstream from the confluence of Rope Creek with the Republican River on the west bank at an elevation of 1,990 ft. The site is located between the two water sources, with the Republican River to the south and Rope Creek 260 m to the west. The site was in pasture at the time of survey.

Field Methods: Site 25HN73 was shown to the author by Mr. Conrad Boehler, a local landowner, while the crew was investigating site 25HN65. A visual pedestrian survey was made of the site, and portions of Mr. Boehler's collection of artifacts were reviewed at his residence. Since this site lies on private property and outside the area covered in the scope of work, no subsurface investigations were conducted.

Materials Recovered: Surface materials recovered consisted of one utilized flake, one bifacial thinning flake, and one bifacial knife fragment (Appendix B). Although visibility was impaired by pasture conditions, Mr. Boehler indicated an area in excess of 50 m x 50 m for the site. Items in Mr. Boehler's collection included more lithic material and fragments of Upper Republican ceramics. Mr. Boehler indicated that he had collected projectile points from the site and had given these away; he could not recall their shape or outline.

Discussion: Site 25HN73 appears to be an Upper Republican site, most likely a seasonal encampment based on the presence of ceramics reported from the locality. At present, the accuracy of this inference cannot be assessed without subsurface investigations. Of three sites discovered along the Rope Creek area (25HN66, 25HN69, and 25HN73), 25HN73 may be the larger and more complex. Although the other two sites yielded no temporally/culturally diagnostic artifacts, there is the



MAP 13

Harlan County Lake Project
Site 25HN73

0 250 500 Feet

0 100 200 Meters

possibility that those two sites were contemporaneous with 25HN73 and represented limited activity loci associated with this larger encampment.

Site 25HN74

Setting: Site 25HN74 is located on privately owned property adjacent to the U. S. government property line (Map 6). The site occupies a broad expanse of terrace at an elevation of approximately 1,790 ft and approximately 400 m north of the Republican River. The terrace is flanked on the west by a broad expanse of stream floodplain formed by the confluence of Rope Creek with the Republican River approximately 400 m southwest of the site. The site was in a fallow, previously plowed, agricultural field at the time of survey.

Field Methods: Site 25HN74 was shown to the author by Mr. Conrad Boehler, a local landowner, while the crew was investigating site 25HN65. A limited visual pedestrian survey was conducted at the site, and portions of Mr. Boehler's collection of artifacts were viewed and photographed. Since this site lies on private property and outside the area covered in the scope of work, no subsurface investigations were conducted.

Materials Recovered: Only lithic debris was encountered at site 25HN74, and no culturally/temporally diagnostic materials were recovered as a result of survey. Mr. Boehler stated that he had never found any ceramics on the site in the many years he has farmed it; however, Mr. Boehler had a small collection of lithic artifacts from site 25HN74. These included three bifaces and one Scottsbluff II projectile point (cf. Bell 1958:86-87). The Scottsbluff point, described by Wormington (1957:267), is a large, lanceolate point with a short, well defined stem and was assigned to the late Paleo-Indian Cody complex (Wormington 1957:136-137). Radiocarbon dates at other Cody complex sites range from 9,524 ± 450 years B.P. (7574 B.C.) at the Lime Creek site in Nebraska (Bell 1958:86) to 6650 B.C. at Hell Gap, Wyoming (Irwin-Williams et al. 1973:50). Excavations at the Hell Gap site place the Paleo-Indian Cody complex between ca. 6800 - 6400 B.C. (Irwin-Williams et al. 1973:52), near the end of the Plains Paleo-Indian period and contemporaneous with Early Archaic complexes further east. A total of 19 artifacts was collected by Mr. Boehler and the author (Appendix B).

Plate 1: Artifacts from Site 25HN63

A-H. Upper Republican decorated rim sherds.

I. Unifacial scraper, Smoky Hills flint.

J. Upper Republican (Harrell type) projectile point, Republican River jasper/chert.

K. Woodland side-notched projectile point; chalcedony.

L. Beveled knife fragment; Republican River jasper/chert.

M. Woodland side-notched projectile point; unidentified chert.

N. Endscraper; undetermined chert.

Plate 1

Plate 2: Lithic Artifacts from Site 25HN64

A-E. Biface fragments; Republican River jasper/chert.

F. Fragment of beveled knife; Republican River jasper/chert.

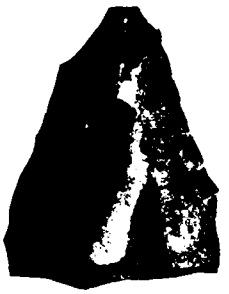
G. Unifacial endscraper; Republican River jasper/chert.

A

B

C

D



E

F

G

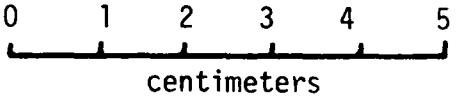


Plate 3: Artifacts from Site 25HN64

A-C. Protohistoric period (White Rock Aspect?) decorated rim sherds.

D-G. Protohistoric period (White Rock Aspect?) body sherds.

H-J. Upper Republican body sherds.

K. Woodland projectile point; unidentified chert.

L. Unifacial endscraper; unidentified chert.

Plate 3

Plate 4: Artifacts from Site 25HN65

Surface Materials

A-C. Bifacial tool fragments.

Excavation Unit S15W20

Level 3 (30-40 cm)

E. Medial section of projectile point; Republican River jasper/ chert.

Level 4 (40-50 cm)

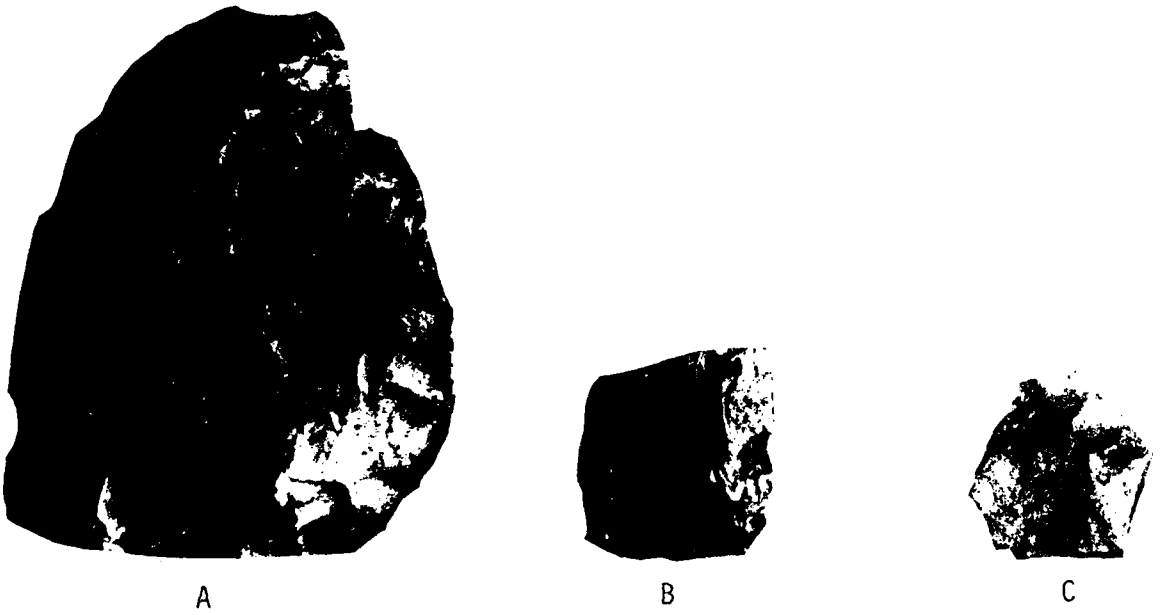
F. Upper Republican rim sherd.

G-H. Upper Republican body sherd.

Level 5 (50-60 cm)

I-J. Upper Republican body sherds.

Plate 4



A B C

G E F H

I J

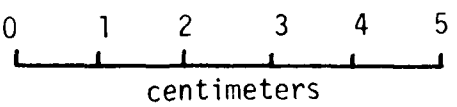


Plate 5: Artifacts from Site 25HN65

Surface

A. Unifacial endscraper; Republican River jasper/chert.

B. Retouched flake; petrified wood.

C. Upper Republican rim sherd.

Feature 1

D. Unifacial endscraper; undetermined chert.

E. Upper Republican body sherd.

F. Crude biface/tested core; Republican River jasper/chert.

G-I. Upper Republican body sherds.

K-N. Bone fragments.

Plate 5

Plate 6: Artifacts from Site 25HN70

A-C. Crude unifacial tool; undetermined chert.

B. Bifacially worked fragment; Republican River jasper/chert.

C. Retouched flake; Republican River jasper/chert.

D-H. Upper Republican(?) body sherds: eroded.

Plate 6

A

B

C

D

E

F

G

H

0 1 2 3 4 5

centimeters

CONCLUSIONS

Introduction

Data derived from the 10% sample survey in the Harlan County Lake area were sufficient to address all proposed research questions (see Research Design) and satisfy requirements of the scope of work. In all, 250 acres of land were surveyed and distributed according to the sampling strategy proposed in the Research Design:

upland/bluff:	100/ 403 acres =	24.8%	n_1 = 5	10 acre units
terrace:	220/ 828 acres =	26.6%	n_2 = 11	20 acre units
bottomland:	200/3,937 acres =	5.1%	n_3 = 10	20 acre units
Total:	520/5,168 acres =	10.06%	n = 26	20 acre units

Of the five previously designated timber tracts (100 acres total), three tracts were inaccessible due to flood conditions at the time of survey. One in Section 36 (T2N, R19W), was completely inundated, and access to the other two (in Sections 26 and 35) was blocked by standing water. Alternates 1, 2, and 3 (representing equivalent acreage) in the floodplain were chosen and approved for survey by Corps of Engineers personnel.

Twelve archaeological sites were recorded as a result of the survey. Ten of the sites are prehistoric sites, although one had a historic component. Data from these 10 sites are applicable in addressing the following research questions. Research questions pertaining to historic Euro-American settlement were not formulated, since prior to 1983 no historic sites had been recorded as a result of cultural resources management work. Data from the seven prehistoric sites found within the confines of U. S. government property are applicable to the formulation of a predictive model.

Evaluation of Research Questions

1. Site frequency, expressed as a function of site density distributions within topographic zones, may be rank ordered in descending order as follows: terraces, uplands, and bottomlands.

This proposition is rather straightforward and may be assessed by rank ordering observed site densities within topographic zones and comparing them against the proposed ordering (Table 3). Because only

three ordinal categories are being compared, statistical assessment including nonparametric tests such as Kendall's Tau or Spearman's Rho is inappropriate. The following data were observed.

Table 3

Site Density Distributions Within Zones

Zone	Hypothesized Zone	Observed Rank	No. of Sites	Acreage (hectares) Surveyed	Density Sites/km^2
Terrace	1	1	9	220 (89)	10.1
Upland	2	2	1	100 (40.5)	2.5
Bottomland	3	3	0	200 (80.9)	0

The rank ordering of topographic zones by expected site frequency corresponds to that observed in the field. This relative distribution is consonant with a previous study that quantified site density data (cf. Pepperl and Falk 1979:39).

2. Distribution of site types will be similar to other parts of the reservoir area which have been studied previously.

In many respects, this question represents a refinement of considerations addressed in question 1; however, in addition to relative site density, absolute site density and relationship to topographic features are considered. A comparative data base (Table 4) against which the present survey results (Table 5) are based were assembled by Pepperl and Falk (1979:15-20) for Woodland, Upper Republican, and protohistoric period sites, all of which were encountered during this survey. Ossuary sites (25HN1, 25HN2, 25HN3, 25HN5, and 14PH4) have been excluded from the comparative data base since Pepperl and Falk noted that their locational positioning was anomalous (1979:14, 17).

Data assembled by Pepperl and Falk (1979) indicate the overall positioning of sites as being both lower in mean elevation above permanent water sources (5.4 m) and closer to these sources (mean = 207.5 m) than sites discovered during this survey (mean elevation = 12.1 m; mean distance from permanent water = 568 m). Further, their data (Pepperl and Falk 1979:15-20) indicate that Woodland sites are closer to water (mean = 124.3 m) and lower in elevation (mean = 4.3 m) than Upper Republican sites (mean distance = 231.1 m; mean elevation = 6 m). Data derived from the 1983 investigations (Table 5) also indicate that Woodland sites are relatively lower in elevation than Upper Republican sites but that the Upper Republican sites are closer to water.

Table 4

Selected Location Data for Sites
Assigned to the Woodland, Upper Republican, and Protohistoric Periods, Harlan County
(after Pepperl and Falk 1979:15-10)

Site	Site Type	Topographic Position[2]	Estimated Relation to Permanent Water Source: Meters Above	Meters From	Source (Recent Channel)	Period
25HN9	Habitation	Low Terrace	3	130	Prairie Dog Creek	Woodland
25HN10[1]	Habitation	Low Terrace	3	60	Sappa Creek	Woodland
25HN12	Habitation	High Terrace	6	240	Prairie Dog Creek	Woodland
25HN32	Habitation	Footslope	3	50	Cook Creek	Woodland
25HN35	Habitation	Footslope	6	50	Cook Creek	Woodland
25HN38	Habitation	High Terrace	6	280	Prairie Dog Creek	Woodland
25HN40	Habitation	High Terrace	3	60	Methodist Creek	Woodland
25HN7[1]	Habitation	Low Terrace	3	50	Eureka Creek	Upper Republican
25HN8[1]	Habitation (with burials?)	Low Terrace	3	500	Sappa Creek	Upper Republican
25HN11	Village	High Terrace	9	180	Prairie Dog Creek	Upper Republican
25HN31	Village	High Terrace	9	340	Republican River	Upper Republican
25HN33	Habitation	Footslope	9	220	Republican River	Upper Republican
25HN34	Habitation?	Low Terrace	3	500	Prairie Dog Creek	Upper Republican

Table 4 (cont'd)

Site	Site Type	Topographic Position[2]	Estimated Relation to Permanent Water Source: Meters Above	Meters From	Source (Recent Channel)	Period
25HN36	Habitation	Footslope	12	100	Republican River	Upper Republican
25HN44	Village Habitation	Low Terrace	3	150	Republican River	Upper Republican Protohistoric
14PH5[1]	Habitation	Low Terrace	3	40	Prairie Dog Creek	Upper Republican
25HN16	Habitation?	Footslope	9	940	Republican River	Protohistoric
25HN37	Village	High Terrace	9	40	Prairie Dog Creek	Protohistoric
25HN39	Temporary Camp	Low Terrace	3	160	Prairie Dog Creek	Protohistoric
25HN45	Temporary Camp	Low Terrace	3	60	Prairie Dog Creek	Protohistoric

[1]Site is located beyond reservoir boundary.

[2]Positions are determined by 1930 soil survey and compared with 1974 soil survey.

All Sites	n = 20	$\bar{X}$ =	5.40	207.50
Woodland	n = 7	$\bar{X}$ =	4.28	124.29
Upper Republican	n = 9	$\bar{X}$ =	6.00	231.11
Protohistoric	n = 5	$\bar{X}$ =	5.40	270.00

Table 5

Selected Location Data for Newly Recorded Sites Assigned to the Woodland, Upper Republican, and Protohistoric Periods, Harlan County Lake Project Area, Nebraska

Site	Site Type	Topographic Position	Estimated Relation to Permanent Water Source: Meters Above	Estimated Relation to Permanent Water Source: Meters From	Meters from Closest Water Source	Permanent Source	Period
25HN63	Campsite Habitation	Terrace	9.1	1,200	40	Republican River	Woodland Upper Republican
25HN64	Campsite Habitation Habitation	Low Terrace	9.1	1,500	500	Republican River	Woodland Upper Republican Protohistoric
25HN65	Habitation	Terrace	13.7	900	100	Republican River	Upper Republican
25HN66	Campsite	Terrace	9.1	200	200	Rope Creek	Protohistoric
25HN69	Lithic/ Scatter	Terrace	13.7	120	120	Rope Creek	Undetermined Prehistoric
25HN70	Habitation	Upland	16.0	40	40	Republican River	Upper Republican
25HN71	Lithic/ Scatter	Terrace	7.9	260	80	Republican River	Undetermined Prehistoric
25HN72	Lithic/ Scatter	Terrace	15.2	1,000	160	Republican River	Undetermined Prehistoric

Table 5 (cont'd)

Site	Site Type	Topographic Position	Estimated Relation to Permanent Water Source: Meters Above	Meters From	Meters from Closest Water Source	Permanent Source	Period
25HN73	Habitation	Terrace	13.7	260	260	Rope Creek	Upper Republican
25HN74	Campsite	Terrace	13.7	200	200	Rope Creek	Late Paleo-Indian/ Early Archaic
All Sites		n = 10	$\bar{X}$ = 12.12	568	170		
Woodland		n = 2	$\bar{X}$ = 9.10	1,350	270		
Upper Republican		n = 5	$\bar{X}$ = 12.30	780	188		
Protohistoric		n = 2	$\bar{X}$ = 9.10	850	350		

These differences may be attributable to the small sample sizes in both studies or other yet undiscerned factors. Previous studies noted by Pepperl and Falk (1979) concerning Woodland sites also point to variability in these locational factors. Kivett's (1970) study of environmental adaptations coincide with Pepperl and Falk's (1979) results, showing Woodland sites at lower elevations on the terraces than those occupied by Upper Republican sites. Johnson's (1974) study of Woodland sites in Platte County, Missouri, also supports a terrace location preference for Woodland sites; however, Scott's (1973) study of Woodland sites in the south Platte River system of eastern Colorado indicates orientation towards higher locales in stream valleys. Studies of Upper Republican settlement patterns (e.g., Krause 1969, 1970) also argue for a terrace orientation as well as proximity on or near footslopes. Data derived from this study produced four Upper Republican sites on terraces and one in an upland or eroding footslope context.

While occupation of terraces seems to be a salient factor in both Woodland and Upper Republican settlement systems in the Harlan County Lake area, absolute distance to and absolute elevation above permanent water cannot be demonstrated at present to be definitive factors. However, relative distance to water, particularly where permanent or intermittent streams cut across the foot slopes and terraces, appears to be a potential discriminant factor in site placement. While data from this study indicate a mean distance of 568 m from permanent water for all sites, if the closest water source is considered (permanent or intermittent), this mean distance is reduced to 170 m (Table 5). This may be of particular relevance for seasonally occupied sites which may have been inhabited during the spring and early summer when small streams may have contained sufficient water for human groups.

In general, the distribution of sites found may be considered similar to those found by earlier studies in that terrace locales are preferred habitation spots and relative access to water was important. Elevation of sites relative to permanent water may or may not be a discriminant factor in differentiating Woodland from Upper Republican settlement patterns. One major physiographic difference between the eastern portion of the reservoir area where Pepperl and Falk's (1979) study was conducted and the western portion where this study was performed is that relatively more and larger permanent water sources were available in the eastern half (Prairie Dog, Cook, Methodist, Crystal, and Eureka creeks) of the area than in the western half (Sappa, Rope, and Flag creeks). This may have had an influence on prehistoric settlement patterns in the area. These factors should be considered in future research in the Harlan County Lake project area.

3. Approximately 50% of the sites to be found will not produce culturally diagnostic materials.

Ten prehistoric sites were recorded, seven of which produced culturally/temporally diagnostic materials (Table 6). This percentage (70%) was higher than expected; however, data from three of the sites came from other than field investigations by the 1983 field crew. Information from two sites was supplied by local collectors and examined

Table 6

Culturally and Temporally Diagnostic Components Represented at Aboriginal Sites Encountered During the 1983 Season

	Late Paleo/ Early Archaic	Woodland	Upper Republican	Proto-historic	Historic
25HN63		X	X		
25HN64		X	X	X	
25HN65			X*	X*	
25HN66			*		*
25HN69					
25HN70			X		
25HN71					
25HN72					
25HN73			**		
25HN74	**				
	1	2	6	2	1

No. of sites = 10
No. of components = 12

X Material collected during this survey
* Material collected and reported by other professional archaeologists
** Material reported by local collectors and examined by the author

by the author, and information from the third site was supplied by another archaeological crew working in the area.

If not for local informants, only seven sites would have been recorded since sites 25HN72, 25HN73, and 25HN74 were outside the property boundries of the Corps of Engineers. Also, no culturally/ temporally diagnostic information would have been recorded for site 25HN66 were it not for the other archaeological crew. Under these circumstances, only four of seven sites (57%) would have produced diagnostic information, more closely approximating the expected 50% figure.

The higher than expected recovery rate of diagnostic information is encouraging and points to the value of using informant-supplied data. The significance of these results is not in terms of statistical significance, but rather it is illustrative of the recovery rate of

temporally/culturally data that may be expected for the Harlan County Lake area. From this study and earlier studies (Pepperl and Falk 1979; Roetzel 1982), it appears that about one-half of new sites identified by a single survey visitation will produce culturally/temporally diagnostic materials. Further, use of local collectors' data and revisitation of sites can increase this percentage.

4. Sites identified as being from the Plains Woodland period and the Upper Republican aspect of the succeeding Plains Village period will be the predominant culturally/temporally diagnostic sites to be encountered.

Culturally/temporally diagnostic data were recovered from 7 of 10 aboriginal sites (Table 6) representing 2 distinct components including information supplied by collectors and other archaeologists (CASA 1983). As expected, most of the assignable components (67%) were from the Woodland (2) and Upper Republican (6) periods. These findings are consonant with those of earlier investigations (e.g., Falk and Thiessen 1972; Pepperl and Falk 1979; Roetzel et al. 1982). At present, there is no indication that this pattern will change in future field investigations.

Predictive Modeling

The following discussion presents a predictive model concerning the number of sites to be found on the Corps of Engineers lands within the Harlan County Lake project area west of U. S. Highway 183. Two sets of data are utilized: 1) primary field and subsequent analytical data derived from the present study and 2) a comparative data set based upon Pepperl and Falk's (1979) study which also dealt with a 10% sampling strategy and subsequent predictive modeling.

Data

Data from Pepperl and Falk's (1979) study (Table 7) were used comparatively against data derived from the present study (Table 8) in a number of ways. Of primary concern were figures on the number of sites found and physiographic zones in which they occurred. Density figures were used for sites per acre and projected site frequency over the entire reservoir area (Pepperl and Falk 1979:39) for comparison against the 1983 data. The present data were structured in the same manner so as to be directly comparable. Also, the 1983 data were structured in accordance with the sampling design used and expressed in terms of the 20-acre observation units (Table 9). This allowed for subsequent analyses such as point and interval estimates of numbers of sites to be found, establishment of confidence intervals, and derivation of necessary sample sizes for future use in order that proposed methods of research may be implemented and achieve reliable results for assessment of the predictive model. Conclusions from this analysis are incorporated into the Recommendation and Management Plan (next chapter).

Table 7

Projected Prehistoric Site Frequencies for the Entire Harlan County Lake Project Area Based Upon Pepperl and Falk's Study (1979:39)

Topographic Zone	Area Above Normal Pool (acres)	Test Area Site Rate Per Acre	Projected Site Frequency
Bottomland	3,895	0	0
Upland	7,395	0.00537	40
Terrace	5,060	0.00857	43
Totals	16,350	--	83

Table 8

Observed Prehistoric Site Frequencies for Lands Surveyed During the Present Study Within the Harlan County Lake Project Area

Topographic Zone	Acreage Surveyed	Site Frequency	Site Rate Per Acre
Bottomland	200	0	0
Upland	100	1	.01
Terrace	220	6	.0273
Totals	520	7	.0135

Table 9

Observed Site Frequency Per 20-Acre Observation Tract for 1983 Data

Observation No.	Topographic Zone	Site Frequency	Mean (M) (n-1 weighting)	Standard Error (S_M)
1	Bottomland	0		
2	Bottomland	0		
3	Bottomland	0		
4	Bottomland	0		
5	Bottomland	0		
6	Bottomland	0		
7	Bottomland	0		
8	Bottomland	0		
9	Bottomland	0		
10	Bottomland	0	0	0
11	Upland	0		
12	Upland	1		
13	Upland	0		
14	Upland	0		
15	Upland	0	.200	.447
16	Terrace	0		
17	Terrace	0		
18	Terrace	0		
19	Terrace	1		
20	Terrace	2		
21	Terrace	0		
22	Terrace	1		
23	Terrace	0		
24	Terrace	0		
25	Terrace	0		
26	Terrace	2	.545	.820

Based upon Pepperl and Falk's (1979:39) projected site frequencies and site rate per acre rates (Table 7), the following number of sites should have been encountered in each zone during the present survey: bottomland, 0; upland, 0.54 ≈ 1; terrace, 1.88 ≈ 2. The following distribution was observed: bottomland, 0; upland, 1; terrace, 6. While the frequencies for the bottomlands and uplands were about as expected, the observed frequency for the terrace areas was considerably higher than expected.

Since both studies employed well defined, stratified sampling designs, this discrepancy can only be attributed to sampling error at this time. This sampling error most likely derives from the fact that archaeological sites are rare occurrences relative to the small amounts of acreage surveyed in each study and that sample sizes (number of observations) were small: four systematically placed linear transects across topographic zones in Pepperl and Falk's (1979:7) study and 26 randomly distributed 20-acre tracts in this study. These data suggest

that a 10% sampling strategy may be inadequate for purposes of predictive studies in the project area relative to the amount of acreage contained within the Harlan County Lake project area.

Analysis

Based upon Pepperl and Falk's (1979) projected site frequency figures (Table 10), the following frequency of sites would be expected for all reservoir lands west of U. S. Highway 183.

Table 10

Projected Site Frequencies for All Lands
West of U. S. Highway 183 Using Pepperl and Falk's (1979) Data

Topographic Zone	Observed Site Rate Per Acre	Acreage	Expected No. of Sites
Bottomland	0	3,937	0
Upland	0.00537	403	2.16
Terrace	0.00857	828	7.09
Total	--	5,168	9.25

If the same computational methods were used in this study, data derived from the 10% 1983 sample would yield the following results:

Table 11

Projected Site Frequencies for All Lands
West of U. S. Highway 183 Using Data From This Survey

Topographic Zones	Observed Site Rate Per Acre	Total Acreage	Expected No. of Sites
Bottomland	0	3,937	0
Upland	.0100	403	4.03
Terrace	.0273	828	22.60
Total	--	5,168	26.63

Since the present survey examined only 10% of the lands in the project area and produced seven sites, it is evident that Pepperl and Falk's data may have underestimated the number of resources present, particularly with regard to the terrace topographic zone. However, the 1983 data produced only point estimates based on means with no

consideration of variance and standard error of the mean (i.e., standard deviation).

The review and commentary of Pepperl and Falk's study (1979:Appendix D, particularly pp. 115, 119) discuss the use of confidence intervals using the t-table. Use of confidence intervals and the t-distribution provide a means of incorporating variance into estimates, expressed as expected ranges of frequency or interval estimates, within an acceptable confidence interval. This is a useful and more preferable way of producing estimates of occurrence and is applicable to the problem at hand. These suggestions are incorporated into our predictive statement.

The mean number of sites per (20-acre) observation tract and standard error, presented earlier in Table 9, are employed in the construction of interval estimates for site occurrence within the project area. The t-distribution is used instead of the Z-score formula for construction of confidence intervals because of the small sample size ($n < 30$) within each strata (see Roscoe 1975:167-168, 215-216 for discussion). The following formulae (Roscoe 1975:216) were employed:

$$\text{upper limit} = M + t_c S_M$$

$$\text{lower limit} = M - t_c S_M$$

where: M = mean number of sites per observation unit

S_M = standard error of the mean

t_c = tabled t-statistic for a given confidence coefficient or degree of confidence with $n-1$ degrees of freedom (df)

Since the resulting confidence interval is that of a single 20-acre tract, the interval was multiplied by the number of potential 20-acre tracts (N_T) included as in each zone so that a point estimate and confidence interval would be constructed for each zone. This is computed as follows:

$$\text{confidence interval} = (M \pm t_c S_M) N_T$$

Confidence intervals were calculated for the 90% confidence level at 4 df for uplands and 10 df for terraces. Confidence intervals were not calculated for bottomland areas since no sites were found. The following results were obtained.

$$\text{uplands: } [.2 \pm (2.132).44]20.15 = (.2 \pm .93809)20.15 = 4.03 \pm 18.902312 \simeq 4 \pm 19$$

$$\text{terraces: } [.545 \pm (1.812).82]41.40 = (.545 \pm 1.48584)41.40 = 22.563 \pm 61.513775 \simeq 23 \pm 62$$

Since site frequencies less than 0 do not exist, these ranges may be expressed as 0 - 23 sites for uplands (mean = 4) and 0 - 85 sites for terraces (mean = 23). Based upon the 1983 survey results, the lower limits can be set to reflect the number of sites known within these zones. Therefore, the ranges may be reduced to 6 - 85 for terraces (mean = 23) and 1 - 23 for uplands (mean = 4).

Discussion

The point estimates, or means, derived by using confidence intervals (upland = 4.03, terraces = 22.563) are nearly identical as those point estimates derived from using the observed site rate per acre (Table 11: uplands = 4.03, terraces = 22.6). Since sample means are considered the best unbiased estimates of the population mean where other parameters are unknown (Roscoe 1975:163), these sample means are used for the predictive statement concerning the number of sites to be found in the unsurveyed lands east of U. S. Highway 183. The ranges derived from use of confidence intervals are not very precise since they are large, which again may be attributed to the sample size. The standard error of a sample mean is inversely proportional to sample size and, therefore, affects the size of confidence intervals.

Although the present study and that of Pepperl and Falk (1979) did not produce any floodplain sites, nor predicted the occurrence of floodplain sites, previous research compiled over the past 40 years has produced floodplain sites. These sites are extremely rare, with only 5 or 6 having been recorded over 25,092 acres of floodplain east of U. S. Highway 183. Thus, at a rate of 1 site/4,200-5,000 acres, no more than 1 floodplain site can be expected for the 3,937 acres west of U. S. Highway 183.

Conclusions

Based on the foregoing presentation of data and analyses, the following offered as a projection of the numbers of prehistoric sites expected to occur within the three topographic zones for lands west of U. S. Highway 183.

Table 12

Expected Number and Distribution of Prehistoric Sites to be Found on Lands West of U. S. Highway 183, Harlan County Lake Project Area

Topographic Zone	Total Acres	Acres Surveyed	Acres Remaining	Expected No. of Sites	Sites Found To Date	No. of Sites Remaining to be Found
bottomland	3,937	100	3,737	1	0	1
upland	403	100	303	4	1	3
terrace	828	220	608	23	6	17
All	5,158	520	4,648	28	7	21

A Consideration of Sample Size

As noted earlier, the discrepancies in rates of site occurrence per acre (i.e., density) between Pepperl and Falk's (1979) study and the present study and the wide range of expected sites based upon confidence interval estimates have been attributed to the small sample sizes (10%) utilized in both studies. While it is conceded that "no magic figure" (Read 1975:51) exists as to what constitutes an adequate sample percentage for archaeological sampling, it is recognized that the percentage size of the sample may vary depending on the size of the parent population. Prior knowledge of a study area is particularly useful in constructing sampling designs, especially where predictive modeling is a research objective (cf. Roper 1979:141).

The results of the present survey may be utilized in deriving adequate sample sizes for future field research in the project area. Because statisticians recognize that sampling error is inversely proportional to sample size, formulae have been derived to determine adequate sample size based upon knowledge of the standard error (or standard deviation), desired confidence levels (Z_c, however, using the t-distribution) and maximum acceptable error (Roscoe 1975:183). In the present case, the standard errors can be computed from the field data, and the confidence level should be set equivalent to that used in predicting the number of resources to be found (90%). Maximum acceptable error (e_m) is a judgment call and is determined by how much error a researcher is willing to accept.

At present, an error factor of 0.3042 sites/20-acre tract exists between the present study and the study of Pepperl and Falk (1979). This figure was derived from the difference between the mean number of sites/20-acre tract observed during this study (where N_o = 16, the number of upland and terrace observation tracts), and the estimated number of sites per observation tract based on Pepperl and Falk's (1979:39) data, 0.4375 (S_M = .73) and 0.1333 respectively. In an effort to reduce sampling error and increase reliability of results, a maximum acceptable error (e_m) of 0.1521 is proposed, equal to 1/2 the present error.

Thus, the required sample size at 90% confidence (df = 15) is:

$$N = \left(\frac{t\ S_M}{e_m}\right)^2$$

$$= \left(\frac{1.671(.73)}{.1521}\right)^2$$

$$= 8.02^2$$

$$= 64.32$$

$$\approx 64$$

The sample survey data indicate that to achieve a reliable sample within 90% confidence levels with a data set that has a standard error about the mean of .73 sites/observation tract, 64 20-acre tracts will need to be surveyed.

The terrace and upland areas of the project area contain only 61.55 (= 62) potential 20-acre survey tracts (1,231 acres), of which 16 (320 acres) have been surveyed already. Since the proposed figure of 64 tracts exceeds the total acreage that remains (911 acres = 46 tracts), it would appear that surveying anything less than the rest of the terraces and uplands may not produce a reliable sample within a 90% confidence interval.

RECOMMENDATIONS

Introduction

These recommendations are made in conjunction with archaeological research considerations, cultural resources management statutes and regulations, and anticipated impacts and current land use patterns and are presented to serve as a guideline for effective cultural resources management of individual sites and the project as a guide to future research efforts.

General Recommendations and Management Considerations

1. Because of the low frequency of prehistoric archaeological sites to be found in the floodplain, further intensive survey of the floodplain is not recommended. The present 10% sample survey and Pepperl and Falk's (1979) 10% survey produced no previously unrecorded aboriginal sites in the floodplain. Previous research spanning over 50 years (from the excavations of Hill and Strong [Strong 1933] to the present) has yielded approximately 6 prehistoric floodplain sites at a density of 1 site/4,200 acres. Based on this figure, only one floodplain site (point estimate) is posited to exist for lands west of U. S. Highway 183. Therefore, a program of on-site monitoring floodplain areas undergoing timber sales, logging, road building, construction, or other land surface-altering activities is recommended on an as-needed basis. This recommendation is extended to those timber sale tracts (60 acres) originally proposed for survey under this study but inaccessible due to flood conditions in the reservoir area.

2. Intensive 100% survey of the remaining terrace and upland areas is recommended in order to adequately assess the number and range of types of existing prehistoric cultural resources in the lands west of U. S. Highway 183. Analysis of sample sizes (see Conclusions) indicates that future sample surveys of the area will not yield a reliable estimate within a 90% confidence interval of prehistoric cultural resources present. This program should employ shovel probe and visual pedestrian survey techniques, cutbank and erosional bank planing, and informant interviews.

   The research design for such a survey should include post hoc spatial analyses concerning site frequency and distribution. Such analyses should include stratification between upland and terrace tracts, post hoc division into 20 and/or 40 acre tracts to observe site frequency per tract, and derive mean frequencies and confidence intervals per tract size. These data may then be used

in guiding future cultural resources management work as a means of ascertaining adequate sample size for probability based sample surveys.

3. All aboriginal sites recorded on government lands should be spot monitored in order to discourage unauthorized collecting and to protect cultural resources in accordance with federal statutes and regulations.

This recommendation is made as a general management recommendation in compliance with the Archaeological Resources Protection Act of 1979 (Public Law 96-95). Although six of the seven prehistoric aboriginal sites located during this survey are not eligible for nomination to the National Register of Historic Places (NRHP) and not in need of further archaeological investigation, the Federal government has the responsibility to protect such resources from unauthorized activities. The sites recorded require varying degrees of monitoring and/or protection based in part on their "attractiveness" to relic hunters regardless of scientific value and NRHP eligibility. Many of the sites are in no such danger since they have not produced collectible items; however, three of the non-NRHP eligible sites may be susceptible to the occasional arrowhead collector. The following section provides site specific recommendations.

Site Specific Recommendations and National Register of Historic Places Eligibility

Recommendations on a site specific basis range from no recommended action to preservation and protection. Site specific recommendations are presented (summarized in Table 13) in a manner similar to the most recent previous study (Roetzel et al. 1982:135-149) in order to be incorporated into existing cultural resources management programs in effect in the Harlan County Lake project area.

No Recommended Action

Sites 25HN67, -68. These two sites are historic Euro-American period sites. Site 25HN67 is a former habitation site (farmstead) with no intact structural features or architectural integrity. Site 25HN68 is a flood redeposited scatter of historic debris. While an association has been made between 25HN68 and another locale in the context of an important historical event (1935 flood), the site itself is of no archaeological or historical significance. These sites do not meet the criteria for eligibility for nomination to the NRHP. No further action is recommended for these sites.

Sites 25HN72, -73, -74. These three prehistoric aboriginal sites lie outside U. S. government lands and are not covered under the Scope of Work or federal statutes and regulations. Therefore, no cultural resources management recommendations are presented for these sites.

Table 13

Site Recommendations, Harlan County Lake Project Area

Site Number	Site Type	Management Recommendation	Remarks	Potential NRHP Eligibility	Further Archaeological Investigations Needed
25HN63	Habitation	Monitor	Low Priority	No	No
25HN64	Habitation	Monitor	Low Priority	No	No
25HN65	Habitation	Preserve/ Protect	High Priority	Yes	See Site Specific Recommendations
25HN66	Campsite	Monitor	Low Priority	No	No
25HN67	Historic Habitation	None		No	No
25HN68	Redeposited Historic Scatter	None		No	No
25HN69	Lithic Scatter	None		No	No
25HN70	Habitation	None		No	No
25HN71	Lithic Scatter	None		No	No
25HN72	Lithic Scatter	None	Not on Government Land	N/A	N/A
25HN73	Habitation	None	Not on Government Land	N/A	N/A
25HN74	Campsite	None	Not on Government Land	N/A	N/A

Sites 25HN69, -71. Prehistoric aboriginal sites on government lands for which no further action is recommended include all prehistoric lithic sites that did not yield culturally/temporally diagnostic data.

Further, none of these sites yielded any evidence of intact cu ural deposits. As such, these sites offer little archaeological or scientific information beyond locational data reflecting prehistoric land use patterns. Sites 25HN69 and 25HN71 do not meet the criteria for nomination to the NRHP and, therefore, warrant no further archaeological investigations.

Site 25HN70. While surface finds at this site yielded culturally/temporally diagnostic Upper Republican ceramics, no evidence of intact subsurface deposits was recovered. Investigations at 25HN70 revealed that most of the site has been destroyed through erosion caused by the Republican River cutting away at the terrace; materials were found to be washing downslope into the floodplain. While the site's upland location is noteworthy, there is little or no potential for significant or new archaeological data. Although culturally diagnostic materials were recovered from site 25HN70, the possibility of unauthorized collection of materials does not appear likely since this site is not very accessible and if adequate care is given to safeguard the site's location. This site does not meet the criteria for nomination to the NRHP and, therefore, warrants no further archaeological investigation.

Spot Monitoring (Low Priority)

Sites 25HN63, -64, -66. These three sites have yielded culturally/temporally diagnostic materials that range from the Woodland through historic Indian periods. Subsurface testing has indicated that no intact subsurface cultural deposits exist and are, therefore, unlikely to yield new or significant archaeological data beyond temporal/cultural affiliation and/or locational data. Sites 25HN63, 25HN64, and 25HN66 do not meet the criteria for nomination to the NRHP and, therefore, warrant no further archaeological investigations.

These sites are easily accessible from public roads. The potential for unauthorized collection of materials is somewhat greater than at other smaller sites because of the ease of access and because some local inhabitants are aware of their location and that these sites have produced "collectible" prehistoric items such as projectile points, ceramics, and finely made lithic tools. Sites 25HN63, -64, and -66 should receive some form of spot monitoring and may be monitored (visually) easily from the road as Corps of Engineers personnel make daily rounds.

Preserve/Protect (High Priority)

Site 25HN65. One site, 25HN65, is recommended for preservation and protection. Archaeological survey and testing at site 25HN65 indicates that this site contains deposits ranging in depth from the ground surface to at least 90 cm below the ground surface, with prehistoric aboriginal features extending to a depth of at least 1.7 m. Data suggest up to three temporally distinct Upper Republican (ca. A.D. 1000 - 1500) occupations of the Plains Village tradition. While the latest occupation is contained wholly in the plow zone, the major

occupation appears to be intact and situated below the plow zone (the only previous adverse impact to the site), ranging from depths of approximately 40 cm - 90 cm below ground surface. This intact stratum contains midden deposits, aboriginal features, and a favorable bone preservation environment. As such, this site presents excellent opportunity for recovery of prehistoric aboriginal subsistence data, intrasite community patterning and activities, and technological studies pertaining to prehistoric lithic use and ceramic studies.

No prehistoric site of this magnitude and depositional character has been excavated since the 1948-1952 University of Nebraska-Lincoln field school excavations. The use of flotation techniques in archaeology, having come into use in the 1960s (Helback 1969; Struever 1968b), presents a method particularly useful for recovery of subsistence data (e.g., botanical and faunal remains) not available to researchers in the 1940s and early 1950s. Hence, the potential for recovery of significant Upper Republican culture subsistence data at site 25HN65 is great.

Since site 25HN65 exhibits high potential for the recovery of significant data on a regional (Central Plains) scale, it is recommended that the site be protected and preserved. This recommendation is made in light of the fact that no land altering activities are presently proposed for the area of site 25HN65; however, if such activities are planned in the future, appropriate mitigative procedures should be undertaken. In this instance, avoidance and continued preservation of the site is advised as the first course of action through selection of an alternative site for any proposed land altering (e.g., construction) activities. An acceptable, but less desirable, alternative to avoidance would be full scale Phase III excavation procedures under the supervision of professionally trained and accredited archaeologists.

In order to implement the preservation and protection recommendations, it is advised that the area of site 25HN65 be removed from agricultural leasing and sown in clover (temporarily) or native prairie grass (permanent) to halt erosion observed on the south slope of the site. Because of the important nature of this site, it is recommended that public access to the site area be restricted and that the site be monitored regularly to discourage unauthorized collection and/or excavation. These recommendations should receive high priority.

Site 25HN65 meets the criteria for nomination to the NRHP as a single site. An NRHP nomination form has been completed as part of the requirements of this study and forwarded to the U. S. Army Corps of Engineers, Kansas City District, Kansas City, Missouri.

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APPENDIX A

Glossary

Appendix A: Glossary

Artifact: Generally, any material object manufactured or modified through human use, serving as an indicator of past activity.

Biface: A specific type of artifact manufactured by removing flakes from both surfaces to create a cutting edge to shape or to make a tool.

Ceramics: Fired clay objects, usually the fragments (sherds) of utilitarian vessels; both prehistoric and historic.

Cordmarked (also cord wrapped, cord roughened): "A design technique for decorating ceramics where a paddle is wrapped in cordage and pounded against the soft clay before firing, producing a roughened surface" (Roetzel et al. 1982:153).

Core: A mass of raw lithic material (e.g., chert, jasper, flint, obsidian) from which flakes are removed for the purpose of making tools from the flakes.

Core probe: A minimal disturbance technique for subsurface investigations to determine the presence/absence of artifacts, features, midden, or other culture-bearing deposits by using a hand auger or other similar device to extract soil core profiles.

Cultural material: Physical byproducts of past human behavior; includes artifacts, features, structures, or traces thereof.

Debitage: "The residual lithic material from the production of chipped stone tools" (Moore 1983:52). This class of lithic material includes various flake categories and shatter.

Feature: An archaeologically defined trace of past human behavior that is spatially discrete. Its physical context may vary; for example, including organic soil staining, an association of related artifacts (e.g., cache of tools), evidence of past structures (e.g., wall trenches), trash pits, burials, hearths, etc.

Flake: A piece or fragment of any stone, with concholdal fracturing properties that are removed through pressure (flaking) or percussion (chipping). Flakes are removed most commonly from siliceous (predominantly SiO_2) rock such as chert, flint, jasper, obsidian, or chalcedony, although other rock types may be used depending upon availability and proximity of suitable materials.

Hammerstone: "A cobble-sized rock, usually of metamorphic or igneous material, that exhibits impact wear in one or more places as a result of striking or battering" (Moore 1983:56).

Level: A unit of subsurface excavation whose depth is arbitrarily defined. In this study, levels were excavated at 10 cm depths.

Midden: The organic staining and deposition of artifact (or other cultural material) bearing soils as the result of the interaction of human occupation and natural depositional processes.

Projectile point: A specific type of bifacially worked artifact, it is hafted to "the tip of a projected instrument, such as a spear, arrow, or dart" (Roetzel et al. 1982:153). Often made of chipped stone, projectile points can be made from bone or antler and, after historic period contact, metal.

Retouched debitage: Any piece of debitage that has had flakes purposefully removed from any edge for use as a tool.

Scraper: "A tool used by prehistoric peoples for the scraping, cutting, or sawing of [materials such as] wood, hide, bone, or leather" (Roetzel et al. 1982:153). Scrapers may be either unifacially or bifacially worked, including utilized and retouched flakes, reworked projectile points or other broken tools, or purposefully shaped for use as a scraper such as hump-backed, thumbnail, or endscrapers.

Screening: A technique for enhancing artifact recovery during subsurface investigations (e.g., shovel probing or unit level excavation) by passing all excavated soil through any screen such as metal hardware cloth or fine meshed screens. During this study, all excavated soil was passed through 1/4 in grid hardware cloth.

Sherd: Any fragment of pyroclastic materials such as pottery (ceramics) or glass. A body sherd is from part of the body, excluding the rim or lip; sherds from the rim or lip are called rim sherds.

Shovel probe/transect interval: Systematic placement of shovel tests along transects used for archaeological survey in areas of poor surface visibility. Often, the placement of shovel probes is equidistant to the interval between transects. This distance may vary; during this survey, the maximum distance did not exceed 50 m.

Shovel test (shovel probe): Any subsurface excavation unit dug with a shovel, although not of any formally defined depth or surface area. Fill dirt may or may not be screened. Shovel tests often are placed at regularly spaced intervals (see shovel probe/transect interval).

Site: An archaeological site may be defined as a "spatial cluster of features, items [i.e., artifacts] or both" (Binford 1972:146). Single occurrences of features or artifacts are referred to as isolated finds.

Stratigraphy: "The natural layering of the soil as a result of difficult past environmental actions" (Roetzel et al. 1982:154).

Surface reconnaissance (also surface of visual reconnaissance): Systematic method of archaeological survey where the ground surface

is visually inspected and artifacts collected from the surface. Usually all artifacts encountered along a transect are collected; the distance between transects may vary.

Uniface: A chipped stone implement from which flakes are removed from only one surface to create a tool; similar in nature to retouch debitage, unifacial tools (e.g., scrapers) often have more flakes removed than retouched flakes.

Utilized flake: Any flake exhibiting past use by the presence of edge wear (e.g., attrition scars/flakes, sheen) along one or more margins without intentional modification prior to use as in retouched debitage.

APPENDIX B

Materials Recovered
Harlan County Lake Project Area, 1983

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN63
Surface: X Exc: ____
Screening: Dry ___ Wet ___ Flot ___

Bag: 1 of 1
Provenience: ____

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage:				
primary dec. flake				
secondary dec. flake				
interior flake				
shatter w/cortex				Noted in field but not collected.
shatter w/out cortex				
bifacial thinning flake				
polished flake				
retouched debitage		6	34.8	
utilized debitage				
cores		4	293.3	
unifacial tools		4	30.6	
bifacial tools		13	356.0	see Additional Remarks
groundstone tools				
modified lithics		2	325.3	
ceramics:				
Woodland:	Rim			
	Body			
Upper Rep.:	Rim	8	63.2	7 decorated, 1 plain
	Body	65	205.3	cordmarked
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body	2	4.3	1 red interior, 1 plain buff - terminal Upper Republican?

EURO-AMERICAN ARTIFACTS:	QTY	WT(g)	REMARKS
ceramics:			
stoneware			
yellowware			
porcelain			
earthenware			
redware			
glass:			
2 piece hinged mold			
3 piece hinged mold			
automatic bottling			
other			
metal			
cinder/clinker			
plastic			
other			

GEOLOGICAL/UNMOD. LITHIC:

:			
:			
:			

FAUNAL:

bone			
shell			
other			

ADDITIONAL REMARKS: Bifaces: 2 projectile points, 1 white chert ([4.5 g] Woodland), 1 Republican River ([2.5 g] Upper Republican); 1 Upper Republican knife (5.2 g), 2 blanks, Republican River chert (43.8 g); 2 intermediate blanks, 1 Republican River chert (70.2 g) and 1 white chert (56 g); 4 biface fragments, Republican River chert (54.8 g), 3 blank ejects, Republican River chert (127 g).

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN63
Surface: ____ Exc: X
Screening: Dry 1/4" Wet ___ Flot ___

Bag: 1 of 1
Provenience: ____

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage:				
primary dec. flake		1	2.7	
secondary dec. flake				
interior flake		2	1.6	
shatter w/cortex		2	11.4	
shatter w/out cortex		3	1.2	
bifacial thinning flake		6	3.5	
polished flake				
retouched debitage				
utilized debitage		2	7.7	
cores				
unifacial tools				
bifacial tools				
groundstone tools				
modified lithics				
ceramics:				
Woodland:	Rim			
	Body			
Upper Rep.:	Rim			
	Body	1	3.3	smoothed-over cordmarked
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

EURO-AMERICAN ARTIFACTS:	QTY	WT(g)	REMARKS
ceramics:			
stoneware			
yellowware			
porcelain			
earthenware			
redware			
glass:			
2 piece hinged mold			
3 piece hinged mold			
automatic bottling			
other			
metal			
cinder/clinker			
plastic			
other			

GEOLOGICAL/UNMOD. LITHIC:

limestone	3	6.9	

FAUNAL:

bone			
shell			
other			

ADDITIONAL REMARKS: ____

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN63
Surface: ____ Exc: X
Screening: Dry 1/4" Wet ___ Flot ___

Bag: 1 of 1
Provenience: N6E50
L1(PZ) 0-20 cm.

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage: primary dec. flake				
secondary dec. flake		2	7.3	
interior flake				
shatter w/cortex		2	2.6	
shatter w/out cortex		3	1.5	
bifacial thinning flake		3	1.0	
polished flake				
retouched debitage		1	4.1	
utilized debitage		6	12.7	
cores				
unifacial tools				
bifacial tools		1	2.8	Chalcedony projectile point (Woodland)
groundstone tools				
modified lithics				
ceramics: Woodland:	Rim			
	Body			
Upper Rep.:	Rim			3 cordmarked 1 base(?) 1 flared body sherd
	Body	5	6.6	
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

EURO-AMERICAN ARTIFACTS:	QTY	WT(g)	REMARKS
ceramics: stoneware			
yellowware			
porcelain			
earthenware			
redware			
glass: 2 piece hinged mold			
3 piece hinged mold			
automatic bottling			
other			
metal			
cinder/clinker			
plastic			
other			

GEOLOGICAL/UNMOD. LITHIC:

:			
:			
:			

FAUNAL:

bone	5	4.9	
shell	1	0.7	
other	1	0.4	

ADDITIONAL REMARKS: _____

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HI:64
Surface: X Exc:
Screening: Dry ___ wet ___ Flot ___

Bag: Both of 2
Provenience:

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage:				
primary dec. flake		3	20.6	
secondary dec. flake		1	2.7	
interior flake		6	10.1	
shatter w/cortex		6	48.8	
shatter w/out cortex		3	25.3	
bifacial thinning flake		2	1.6	
polished flake				
retouched debitage		5	329.9	
utilized debitage		29	152.2	see Additional Remarks
cores		5	129.3	
unifacial tools		3	16.8	
bifacial tools		8	116.5	includes one projectile point
groundstone tools				
modified lithics		1	170.3	
ceramics:				
Woodland:	Rim			
	Body			
Upper Rep.:	Rim			
	Body	3	4.1	cordmarked
Protohistoric:	Rim	3	36.4	2 collared rims, 1 incised rim
	Body	4	9.6	smoothed over cordmark?
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

EURO-AMERICAN ARTIFACTS:	QTY	WT(g)	REMARKS
ceramics:			
stoneware			
yellowware			
porcelain			
earthenware			
redware			
glass:			
2 piece hinged mold			
3 piece hinged mold			
automatic bottling			
other			
metal			
cinder/clinker			
plastic			
other			

GEOLOGICAL/UNMOD. LITHIC:			
:			
:			
:			

FAUNAL:			
bone	8	20.3	
shell			
other			

ADDITIONAL REMARKS: Utilized Debitage: 2 pieces white chert (0.7 g), 1 piece NC rock (2.9 g); 3 pieces Ogalla (20.2 g); 1 piece gray chert (7.6 g); 2 pieces heat-treated Republican River jasper/chert (12.7 g).

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN64
Surface: ____ Exc: X
Screening: Dry 1/4" Wet ___ Flot ___

Bag: 1 of 1
Provenience: S69W16
L1(P7):0-20 cm

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage: primary dec. flake				
secondary dec. flake				
interior flake				
shatter w/cortex				
shatter w/out cortex				
bifacial thinning flake				
polished flake				
retouched debitage				
utilized debitage				
cores				
unifacial tools		1	11.6	
bifacial tools				
groundstone tools				
modified lithics				
ceramics: Woodland:	Rim			
	Body			
Upper Rep.:	Rim			
	Body			
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

EURO-AMERICAN ARTIFACTS:	QTY	WT(g)	REMARKS
ceramics: stoneware			
yellowware			
porcelain			
earthenware			
redware			
glass: 2 piece hinged mold			
3 piece hinged mold			
automatic bottling			
other			
metal			
cinder/clinker			
plastic			
other			

ECOLOGICAL/UNMOD. LITHIC:

:			
:			
:			

FAUNAL:

bone			
shell			
other			

ADDITIONAL REMARKS: _____

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN65
Surface: X Exc: ____
Screening: Dry ___ Wet ___ Flot ___

Bag: ____ of ____
Provenience: ____

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage: primary dec. flake		6	90.4	
secondary dec. flake		22	87.6	
interior flake		19	45.9	
shatter w/cortex		32	263.6	
shatter w/out cortex		24	54.2	
bifacial thinning flake		18	13.5	
polished flake				
retouched debitage		9	87.1	
utilized debitage		49	250.3	
cores		7	412.9	
unifacial tools		1	12.4	
bifacial tools		4	85.0	
groundstone tools				
modified lithics				
ceramics: Woodland:	Rim			
	Body			
Upper Rep.:	Rim	1	8.4	
	Body	35	167.9	
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body	1	2.9	red slip - Dismal River(?)

EURO-AMERICAN ARTIFACTS:	QTY	WT(g)	REMARKS
ceramics: stoneware	3	87.9	
yellowware			
porcelain	1	1.1	
earthenware	1	3.3	
redware	1	1.2	
glass: 2 piece hinged mold			
3 piece hinged mold			
automatic bottling			
other	1	1.2	
metal			
cinder/clinker			
plastic			
other			

GEOLOGICAL/UNMOD. LITHIC:			
limestone	1	40.2	

FAUNAL:			
bone			
shell	2	5.6	
other			

ADDITIONAL REMARKS: ____

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN65
Surface: ____ Exc: X
Screening: Dry 1/4" Wet ___ Flot ___

Bag: 1 of 1
Provenience: S15W20 (S 1/2)
L2(20-30 cm)

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage: primary dec. flake				
secondary dec. flake				
interior flake		1	0.3	
shatter w/cortex		1	1.6	
shatter w/out cortex				
bifacial thinning flake				
polished flake				
retouched debitage				
utilized debitage				
cores				
unifacial tools				
bifacial tools				
groundstone tools				
modified lithics				
ceramics: Woodland:	Rim			
	Body			
Upper Rep.:	Rim			
	Body	1	1.7	
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

EURO-AMERICAN ARTIFACTS:	QTY	WT(g)	REMARKS
ceramics: stoneware			
yellowware			
porcelain			
earthenware			
redware			
glass: 2 piece hinged mold			
3 piece hinged mold			
automatic bottling			
other			
metal			
cinder/clinker			
plastic			
other			

GEOLOGICAL/UNMOD. LITHIC:

limestone pebble :	1		
:			
:			

FAUNAL:

bone			
shell			
other			

DDITIONAL REMARKS: Materials are from upper part of level in contact with the lime zone.

HARLAN COUNTY LAKE SURVEY: May 1983

Bag: 1 of 2

Provenience: ST5N20 (N 1/2) LJ(30-40 cm)

Site: 25HI55

Surface: ___ Exc: ___

Screening: Dry ___ Wet ___ Flot ___

PREHISTORIC ARTIFACTS:	QTY	WT(g)	REMARKS:
debitage:			
primary dec. flake			
secondary dec. flake			
interior flake			
shatter w/cortex			
shatter w/out cortex			
bifacial thinning flake			
polished flake			
retouched debitage			
utilized debitage			
cores			
unifacial tools			
bifacial tools			
groundstone tools			
modified lithics			
ceramics: Woodland: Rim			
Body			
Upper Rep.: Rim			
Body			
Protohistoric: Rim			
Body			
Historic: Rim			
Body			
Other: Rim			
Body			

EURO-AMERICAN ARTIFACTS:	QTY	WT(g)	REMARKS
ceramics:			
stoneware			
yellowware			
porcelain			
earthenware			
redware			
glass:			
2 piece hinged mold			
3 piece hinged mold			
automatic bottling			
other			
metal			
cinder/clinker			
plastic			
other			

GEOLOGICAL/UNMOD. LITHIC:			

FAUNAL:			
bone	2		
shell			
other			

ADDITIONAL REMARKS: At 40 cm below ground surface at contact with midden.
Avian fauna (species unknown).

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN65
Surface: ____ Exc: ____
Screening: Dry ____ Wet ____ Flot ____

Bag: 2 of 2
Provenience: S15W20 (S 1/2)
Lv .35-.41 cm)

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage: primary dec. flake				
secondary dec. flake				
interior flake				
shatter w/cortex				
shatter w/out cortex		2	0.7	
bifacial thinning flake				
polished flake				
retouched debitage				
utilized debitage				
cores				
unifacial tools				
bifacial tools		1	0.5	
groundstone tools				
modified lithics				
ceramics: Woodland:	Rim			
	Body			
Upper Rep.:	Rim			
	Body	6	3.1	
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

EURO-AMERICAN ARTIFACTS:	QTY	WT(g)	REMARKS
ceramics: stoneware			
yellowware			
porcelain			
earthenware			
redware			
glass: 2 piece hinged mold			
3 piece hinged mold			
automatic bottling			
other			
metal			
cinder/clinker			
plastic			
other			

GEOLOGICAL/UNMOD. LITHIC:

:			
:			
:			

FAUNAL:

bone	1		
shell			
other			

ADDITIONAL REMARKS: Contact with midden

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN65
Surface: ____ Exc: X
Screening: Dry ___ Wet ___ Flot ___

Bag: 1 of 1
Provenience: S15W20 (N 1/2)
L4 (40-50 cm)

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage:				
primary dec. flake				
secondary dec. flake		1	3.2	
interior flake		1	1.2	
shatter w/cortex				
shatter w/out cortex		8	1.7	
bifacial thinning flake		1	0.2	
polished flake				
retouched debitage		1	4.9	
utilized debitage				
cores				
unifacial tools				
bifacial tools				
groundstone tools				
modified lithics				
ceramics:				
Woodland:	Rim			
	Body			
Upper Rep.:	Rim	1	0.3	
	Body	8	7.5	
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

EURO-AMERICAN ARTIFACTS:	QTY	WT(g)	REMARKS
ceramics:			
stoneware			
yellowware			
porcelain			
earthenware			
redware			
glass:			
2 piece hinged mold			
3 piece hinged mold			
automatic bottling			
other			
metal			
cinder/clinker			
plastic			
other			

OLOGICAL/UNMOD. LITHIC:

pebbles :	21	11.7	
:			
:			

FAUNAL:

bone	6	1.1	
shell	4	0.6	
other			

ADDITIONAL REMARKS: Midden materials.

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN65
Surface: ____ Exc: X
Screening: Dry 1/4" Wet ___ Flot ___

Bag: 1 of 1
Provenience: S15W20 (N 1/2)
L5 (50-60 cm)

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage: primary dec. flake				
secondary dec. flake				
interior flake				
shatter w/cortex				
shatter w/out cortex		2	1.7	
bifacial thinning flake				
polished flake				
retouched debitage				
utilized debitage		1	5.3	
cores				
unifacial tools				
bifacial tools				
groundstone tools				
modified lithics				
ceramics: Woodland:	Rim			
	Body			
Upper Rep.:	Rim	1	9.9	
	Body	12	11.8	
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

EURO-AMERICAN ARTIFACTS:	QTY	WT(g)	REMARKS
ceramics: stoneware			
yellowware			
porcelain			
earthenware			
redware			
glass: 2 piece hinged mold			
3 piece hinged mold			
automatic bottling			
other			
metal			
cinder/clinker			
plastic			
other			

GEOLOGICAL/UNMOD. LITHIC:

pebbles :	6	3.3	
:			
:			

FAUNAL:

bone	11	1.9	
shell	3	1.2	
other			

ADDITIONAL REMARKS: Rodent bone may be intrusive into midden.

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN65
Surface: ____ Exc: X
Screening: Dry 1/4" Wet ___ Flot ___

Bag: 1 of 1
Provenience: S15W20 (N 1/2)
L6 (60-70 cm)

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage: primary dec. flake				
secondary dec. flake				
interior flake				
shatter w/cortex				
shatter w/out cortex		1	0.3	
bifacial thinning flake				
polished flake				
retouched debitage				
utilized debitage				
cores				
unifacial tools				
bifacial tools				
groundstone tools				
modified lithics				
ceramics: Woodland:	Rim			
	Body			
Upper Rep.:	Rim			
	Body	2	0.6	
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

EURO-AMERICAN ARTIFACTS:	QTY	WT(g)	REMARKS
ceramics: stoneware			
yellowware			
porcelain			
earthenware			
redware			
glass: 2 piece hinged mold			
3 piece hinged mold			
automatic bottling			
other			
metal			
cinder/clinker			
plastic			
other			

GEOLOGICAL/UNMOD. LITHIC:

pebbles	5	2.0	

FAUNAL:

bone			
shell	1	0.1	
other			

ADDITIONAL REMARKS:

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN65
Surface: ____ Exc: X
Screening: Dry 1/4" Wet ___ Flot ___

Bag: 1 of 1
Provenience: S15W20 (N 1/2)
L7 (70-80 cm)

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage: primary dec. flake				
secondary dec. flake				
interior flake				
shatter w/cortex				y
shatter w/out cortex				
bifacial thinning flake				
polished flake				
retouched debitage				
utilized debitage				
cores				
unifacial tools				
bifacial tools				
groundstone tools				
modified lithics				
ceramics: Woodland:	Rim			
	Body			
Upper Rep.:	Rim			
	Body			
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

EURO-AMERICAN ARTIFACTS:	QTY	WT(g)	REMARKS
ceramics: stoneware			
yellowware			
porcelain			
earthenware			
redware			
glass: 2 piece hinged mold			
3 piece hinged mold			
automatic bottling			
other			
metal			
cinder/clinker			
plastic			
other			

GEOLOGICAL/UNMOD. LITHIC:

pebbles :	2	0.6	
:			
:			

FAUNAL:

bone	1	0.2	
shell			
other			

ADDITIONAL REMARKS: No cultural materials noted.

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN65
Surface: ___ Exc: X
Screening: Dry 1/4 Wet ___ Flot ___

Bag: 1 of 1
Provenience: S15W20
L6 (90-100 cm)

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage: primary dec. flake				
secondary dec. flake				
interior flake				
shatter w/cortex				
shatter w/out cortex				
bifacial thinning flake		1	0.3	
polished flake				
retouched debitage				
utilized debitage				
cores				
unifacial tools				
bifacial tools				
groundstone tools				
modified lithics				
ceramics: Woodland:	Rim			
	Body			
Upper Rep.:	Rim			
	Body			
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

ADDITIONAL REMARKS: Possibly from contact with feature

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN65
Surface: ___ Exc: X
Screening: Dry 1/4" Wet ___ Flot ___

Bag: 1 of 1
Provenience: S15W20
L6 (80-90 cm)

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage: primary dec. flake				
secondary dec. flake				
interior flake				
shatter w/cortex				
shatter w/out cortex				
bifacial thinning flake				
polished flake				
retouched debitage				
utilized debitage				
cores				
unifacial tools				
bifacial tools				
groundstone tools				
modified lithics				
ceramics: Woodland:	Rim			
	Body			
Upper Rep.:	Rim			
	Body	1	3.7	from upper half of level
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN65
Surface: ____ Exc: X
Screening: Dry 1/4" Wet ___ Flot ___

Bag: 1 of 1
Provenience: Feature 1
515N20

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage:				
primary dec. flake		1	5.2	
secondary dec. flake				
interior flake		1	2.2	
shatter w/cortex				
shatter w/out cortex		11	2.1	
bifacial thinning flake		2	0.8	
polished flake				
retouched debitage				
utilized debitage				
cores				
unifacial tools		1	4.4	
bifacial tools		1	71.9	
groundstone tools				
modified lithics				
ceramics: Woodland:	Rim			
	Body			
Upper Rep.:	Rim			
	Body			
Protohistoric:	Rim			
	Body	6	4.8	
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

EURO-AMERICAN ARTIFACTS:	QTY	WT(g)	REMARKS
ceramics:			
stoneware			
yellowware			
porcelain			
earthenware			
redware			
lass:			
2 piece hinged mold			
3 piece hinged mold			
automatic bottling			
other			
metal			
cinder/clinker			
plastic			
other			

'EOLOGICAL/UNMOD. LITHIC:

	QTY	WT(g)	REMARKS
pebbles:	17	2.3	
:			
:			

FAUNAL:

	QTY	WT(g)	REMARKS
bone	19	11.7	
shell	14	2.0	
other	X		charcoal present

ADDITIONAL REMARKS:

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN65
Surface: ____ Exc: X
Screening: Dry 1/4 Wet ___ Flot ___

Bag: 1 of 1
Provenience: Feature 1
(170-172 cm below surface)

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage:				
primary dec. flake				
secondary dec. flake				
interior flake				
shatter w/cortex				
shatter w/out cortex				
bifacial thinning flake				
polished flake				
retouched debitage				
utilized debitage				
cores				
unifacial tools				
bifacial tools				
groundstone tools				
modified lithics				
ceramics:				
Woodland:	Rim			
	Body			
Upper Rep.:	Rim	1	4.3	
	Body	13	69.9	
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN65
Surface: ____ Exc: X
Screening: Dry 1/4" Wet ___ Flot ___

Bag: 1 of 1
Provenience: S65W20
11 (0-29 cm)
Plow zone

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage:				
primary dec. flake				
secondary dec. flake				
interior flake				
shatter w/cortex				
shatter w/out cortex		1	0.5	
bifacial thinning flake		1	0.9	
polished flake				
retouched debitage		1	2.8	
utilized debitage				
cores				
unifacial tools				
bifacial tools				
groundstone tools				
modified lithics				
ceramics:				
Woodland:	Rim			
	Body			
Upper Rep.:	Rim			
	Body			
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN65
Surface: ____ Exc: X
Screening: Dry 1/4" Wet ___ Flot ___

Bag: 1 of 1
Provenience: S65W20
12 (29-39 cm)

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage:				
primary dec. flake				
secondary dec. flake				
interior flake				
shatter w/cortex				
shatter w/out cortex				
bifacial thinning flake				
polished flake				
retouched debitage				
utilized debitage				
cores				
unifacial tools				
bifacial tools				
groundstone tools				
modified lithics				
ceramics:				
Woodland:	Rim			
	Body			
Upper Rep.:	Rim			
	Body	1	>0.1	fragmentary
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

EURO-AMERICAN ARTIFACTS:	QTY	WT(g)	REMARKS
ceramics:			
stoneware			
yellowware			
porcelain			
earthenware			
redware			
glass:			
2 piece hinged mold			
3 piece hinged mold			
automatic bottling			
other			
metal			
cinder/clinker			
plastic			
other			

GEOLOGICAL/UNMOD. LITHIC:

pebbles :	3	2.3	
:			
:			

FAUNAL:

bone			
shell			
other			

ADDITIONAL REMARKS: _____

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN66
Surface: X Exc: ____
Screening: Dry ___ Wet ___ Flot ___

Bag: 1 of 1
Provenience: ____

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage: primary dec. flake				
secondary dec. flake		1	0.3	
interior flake				
shatter w/cortex		3	8.9	
shatter w/out cortex		2	2.6	
bifacial thinning flake				
polished flake				
retouched debitage		1	2.1	
utilized debitage		1	9.5	
cores		1	221.9	
unifacial tools				
bifacial tools				
groundstone tools				
modified lithics				
ceramics: Woodland:	Rim			
	Body			
Upper Rep.:	Rim			
	Body			
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

EURO-AMERICAN ARTIFACTS:	QTY	WT(g)	REMARKS
ceramics: stoneware			
yellowware			
porcelain			
earthenware			
redware			
glass: 2 piece hinged mold			
3 piece hinged mold			
automatic bottling			
other			
metal			
cinder/clinker			
plastic			
other			

GEOLOGICAL/UNMOD. LITHIC:

FAUNAL:

bone			
shell			
other			

ADDITIONAL REMARKS: Site reportedly (Briscoe 1983) had a mid-eighteenth century (French) steel projectile point and a middle - late eighteenth century (French?) musket flint collected from the surface.

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN66
Surface: ____ Exc: X
Screening: Dry ___ Wet ___ Flot ___

Bag: 1 of 1
Provenience: NOE0
L1(P2) (0-20 cm)

PREHISTORIC ARTIFACTS:	QTY	WT(g)	REMARKS:
debitage: primary dec. flake			
secondary dec. flake			
interior flake			
shatter w/cortex			
shatter w/out cortex	1	2.1	
bifacial thinning flake			
polished flake			
retouched debitage			
utilized debitage			
cores			
unifacial tools			
bifacial tools	1	0.9	projectile point tip
groundstone tools			
modified lithics			
ceramics: Woodland: Rim			
Woodland: Body			
Upper Rep.: Rim			
Upper Rep.: Body			
Protohistoric: Rim			
Protohistoric: Body			
Historic: Rim			
Historic: Body			
Other: Rim			
Other: Body			

EURO-AMERICAN ARTIFACTS:	QTY	WT(g)	REMARKS
ceramics: stoneware			
yellowware			
porcelain			
earthenware			
redware			
glass: 2 piece hinged mold			
3 piece hinged mold			
automatic bottling			
other			
metal			
cinder/clinker			
plastic			
other			

OLOGICAL/UNMOD. LITHIC:

metamorphic :	2	4.4	
:			
:			

FAUNAL:

bone			
shell			
other			

ADDITIONAL REMARKS: ____

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN67 NO COLLECTION MADE
Surface: X Exc: ____
Screening: Dry ___ Wet ___ Flot ___

Bag: ____ of ____
Provenience: ____

EURO-AMERICAN ARTIFACTS:	QTY	WT(g)	REMARKS
ceramics:			
stoneware			
yellowware			
porcelain			
earthenware			
redware			
glass:			
2 piece hinged mold			
3 piece hinged mold			
automatic bottling			
other			
metal			
cinder/clinker			
plastic			
other			

ECOLOGICAL/UNMOD. LITHIC:			
:			
:			
:			

FAUNAL:			
bone			
shell			
other			

ADDITIONAL REMARKS: House foundation, red brick and cement noted, also one 1930s stove.

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN68
Surface: X Exc: ____
Screening: Dry ___ Wet ___ Flot ___

Bag: 1 of 1
Provenience: ____

EURO-AMERICAN ARTIFACTS:	QTY	WT(g)	REMARKS
ceramics:			
stoneware	22	804.3	
yellowware			
porcelain	25	158.9	
earthenware	33	321.5	
redware	1	55.7	
glass:			
2 piece hinged mold	2	} 786.2	total weight - all glass
3 piece hinged mold	4	}	
automatic bottling	48	}	
other	3	38.7	
metal			
cinder/clinker			
plastic			
other			

ECOLOGICAL/UNMOD. LITHIC:			
:			
:			
:			

FAUNAL:			
bone			
shell			
other			

ADDITIONAL REMARKS: Materials are believed to have been associated with the former Ralston homestead located approximately 3/4 mile to the west; it was destroyed in the 1935 flood.

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN69
Surface: X Exc:
Screening: Dry ___ Wet ___ Flot ___

Bag: 1 of 1
Provenience:

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage: primary dec. flake		1	5.2	
secondary dec. flake				
interior flake				
shatter w/cortex		1	0.1	
shatter w/out cortex				
bifacial thinning flake				
polished flake				
retouched debitage				
utilized debitage				
cores				
unifacial tools				
bifacial tools				
groundstone tools				
modified lithics				
ceramics: Woodland:	Rim			
	Body			
Upper Rep.:	Rim			
	Body			
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN70
Surface: X Exc:
Screening: Dry ___ Wet ___ Flot ___

Bag: 1 of 1
Provenience:

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage: primary dec. flake				
secondary dec. flake		1	1.3	
interior flake				
shatter w/cortex		3	2.9	
shatter w/out cortex		4	3.4	
bifacial thinning flake				
polished flake				
retouched debitage				
utilized debitage		2	8.0	
cores		2	67.9	
unifacial tools		2	41.7	
bifacial tools		2	56.6	
groundstone tools				
modified lithics				
ceramics: Woodland:	Rim			
	Body			
Upper Rep.:	Rim			
	Body	5	11.7	Badly eroded. Grit temper in dark gray matrix.
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN71
Surface: X Exc: ____
Screening: Dry ___ Wet ___ Flot ___

Bag: 1 of 1
Provenience: ____

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage: primary dec. flake				
secondary dec. flake				
interior flake				
shatter w/cortex		1	0.1	
shatter w/out cortex				
bifacial thinning flake				
polished flake				
retouched debitage				
utilized debitage				
cores				
unifacial tools		1	11.5	
bifacial tools		1	8.1	
groundstone tools				
modified lithics				
ceramics: Woodland:	Rim			
	Body			
Upper Rep.:	Rim			
	Body			
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

ADDITIONAL REMARKS: All artifacts are Republican River jasper/chert.

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN72
Surface: X Exc: ____
Screening: Dry ___ Wet ___ Flot ___

Bag: 1 of 1
Provenience: ____

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage: primary dec. flake				
secondary dec. flake				
interior flake				
shatter w/cortex		1	3.6	
shatter w/out cortex				
bifacial thinning flake		1	1.2	
polished flake				
retouched debitage				
utilized debitage				
cores				
unifacial tools				
bifacial tools				
groundstone tools				
modified lithics				
ceramics: Woodland:	Rim			
	Body			
Upper Rep.:	Rim			
	Body			
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

ADDITIONAL REMARKS: All artifacts: Republican River chert/jasper.

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN73
Surface: X Exc: ____
Screening: Dry ___ Wet ___ Flot ___

Bag: 1 of 1
Provenience: ____

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage:				
primary dec. flake		1	5.0	
secondary dec. flake		1	0.7	
interior flake				
shatter w/cortex				
shatter w/out cortex				
bifacial thinning flake				
polished flake				
retouched debitage				
utilized debitage				
cores				
unifacial tools				
bifacial tools		1	16.8	
groundstone tools				
modified lithics				
ceramics:				
Woodland:	Rim			
	Body			
Upper Rep.:	Rim			
	Body			
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

HARLAN COUNTY LAKE SURVEY: May 1983

Site: 25HN74
Surface: X Exc: ____
Screening: Dry ___ Wet ___ Flot ___

Bag: 1 of 1
Provenience: ____

PREHISTORIC ARTIFACTS:		QTY	WT(g)	REMARKS:
debitage:				
primary dec. flake		3	23.0	
secondary dec. flake		3	12.1	
interior flake		2	1.9	
shatter w/cortex		1	1.7	
shatter w/out cortex		3	1.8	
bifacial thinning flake		1	0.2	
polished flake				
retouched debitage				
utilized debitage		2	6.2	
cores		3	364.8	
unifacial tools		1	30.4	
bifacial tools				
groundstone tools				
modified lithics				
ceramics:				
Woodland:	Rim			
	Body			
Upper Rep.:	Rim			
	Body			
Protohistoric:	Rim			
	Body			
Historic:	Rim			
	Body			
Other:	Rim			
	Body			

APPENDIX C

Description of Historic Artifacts Recovered from Sites 25HN65 and 25HN68 Harlan County Lake Project Area, 1983

by

Jerry J. Moore

Site 25HN65

Glass: 1

1 small brown glass fragment

Ceramics: 6

Stoneware - 3
- 2 body sherds: white glaze on both surfaces
- 1 rim sherd: white glaze on both sides, from a large bowl

Earthenware - 1
- 1 body sherd: white glaze on both sides, possibly a plate

Porcelain - 1
- 1 body sherd: glazed, transfer pattern on 1 side is an oriental house scene, it is very similar to a sherd found at 25HN68

Redware - 1
- 1 small fragment

Site 25HN68

Glass: 53

8 fragments of window glass. One 1/4 in thick having a "snowflake" pattern etched in the glass, possibly from a decorative window or cabinet glass

5 small clear body sherds from bottles or jars

3 white milk glass fragments. One possibly from a cup with a fragment of the shoulder. Two canning jar glass liners: one white milk glass, one translucent white with "GEN" on one side and "5" on the other. The liners fit into the top of zinc canning lids that postdate 1882 (Powell et al. 1982:88)

24 light to dark translucent purple glass fragments;

11 body sherds: 1 was from a square or rectangular bottle and had a level mark, |50, on the edge. One body sherd recovered had a confederate flag embossed on the body and writing on several lines "0", "35" "Norfolk, V..." in an arch over the flag which was crossed with another object. This is possibly a commemorative bottle

7 basal fragments: 1 postdates 1903, being made by the automatic bottle making method (Moore 1983:72); 3 others could possibly have been made by the same method. Three rectangular

bottle bases made by the 3-piece hinge mold method, post 1860 (Moore 1983:78); 1 base has "B806" stamped on the kickup

2 shoulder fragments

1 bottle neck fragment

1 plate rim, possibly Depression ware, a term used for cheap glassware made ca. 1930 by the pressmold technique (a method still in use today)

1 threaded shoulder and lip, possibly from a canning jar

1 heavy bodied scallop rimmed lid, possibly from a decorative bowl, made by the pressmold method

2 dark green champagne bottle fragments: 1 body sherd and 1 basal sherd with part of the kickup

1 brown glass body sherd

6 transparent aqua fragments: 1 basal sherd made by the automatic bottle method (post 1903); 1 glass canning jar lid of a type that was popular during the nineteenth and early twentieth centuries; 4 body sherds, 1 possibly being made by the 3-piece mold method (ca. 1860-1903), 1 has "L1" stamped on it, 1 from a square bottle, the last is unidentifiable

4 clear and/or tinted sherds: 2 basal fragments, 1 of which was made by the 3-piece hinged mold technique (ca. 1860-1903); 2 bottle necks, 1 made by the automatic bottle making process (post-1903) and 1 sherd, possibly from a rectangular bottle, made by the 3-piece hinged mold method (ca. 1860-1903)

Ceramics: 81

Stoneware - 22

14 body sherds: 9 are salt glazed on both surfaces, 2 clear glazed on the exterior and brown glaze on the interior, 3 salt glazed on the exterior and brown on the interior

3 basal sherds: 1 basal sherd of cobalt blue "sponge" or "kitchen-cottage spatter ware" (Robacher and Robacher 1978:118), a blue glaze on a white background, the interior is glazed white. This type of ware was mainly used to prepare food rather than to serve food (Robacher and Robacher 1978:118) and dates after 1870 (Orser 1981:43). One basal sherd salt glazed on both surfaces. One white interior glazed basal sherd, possibly a plate cover, "]E·MARK·]]

3 shoulder fragments: 2 white glazed exteriors with 1 glazed

brown on the interior. One glazed brown on both sides, possibly from a jug

2 white glazed rim sherds: 1 square rim from a large bowl, 1 rounded rim from a crock

Earthenware - 36

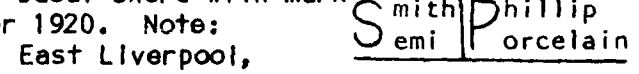
14 body sherds with white glaze on either side. Two fragments have green glaze in a motif of flowers and leaves

12 rim sherds: 4 are glazed white on either side, 1 is a plate that dates from the 1810 - 1870 period (Orser 1981:30), 1 is from a cup, 2 are possible plates or saucers, 2 fragments exhibit a rare dot pattern that is above an entwined line design

1 cobalt blue glaze on the exterior of a possible cup, the edge is dark blue and fades to white, late nineteenth century

1 transfer pattern in blue/green in the shape of flowers and ribbon design on a "rippled" edge of the interior of a plate, dates from the late nineteenth to early twentieth century

1 cream and blue glazed plate; the blue glaze overlaps the cream glaze on both surfaces

7 basal earthenware sherds were found; 1 is an early twentieth century coffee mug/cup; 1 basal sherd with mark 

the style of logo is after 1920. Note: Smith-Phillip China Co., East Liverpool, Ohio, used this mark for their dinnerware; other marks were used for hotels or toilet ware (Barber 1971:106)

Porcelain - 25 (all motifs are by transfer pattern)

7 basal sherds were identified: 2 showed decorative motifs, 1 had a pink flower with green stem on a white background, the other is a polychrome oriental house in orange, red, and yellow glaze

11 body sherds: 6 have flower patterns on a white background, 1 being a rose; 1 body sherd had pink and black strips on a white background dating from the 1920s to 1930s

5 rim sherds: 2 have flower patterns, 1 sherd was trimmed in a band of gold, and the remainder are undecorated white

2 handles: 1 was a cylinder for a metal jar, metal handle from a pail, or part of a utensil; the other was a decorated handle from perhaps a coffee or tea set

Redware - 1

1 red brick fragment

Metal: 3

3 metal objects were found: 2 are iron, including an iron nail; 1 is corroded copper and unidentifiable

APPENDIX D

Analysis of the Faunal Remains from Sites 25HN64 and 25HN65, Harlan County Lake, Nebraska

by

Jonathan A. Bloom

INTRODUCTION

Faunal remains were encountered from 2 of the 10 prehistoric sites discovered during the 1983 field survey. Faunal materials from sites 25HN64 and 25HN65 are discussed below. The limited quantities and distributions of identifiable materials do not lend themselves to detailed interpretations.

SITE 25HN64

All materials from this site were encountered as surface artifacts. Interviews with the former landowner indicated that a large circular subsurface feature of charcoal and burned bone had been leveled where this small site was located. Evidence for this feature or any other feature was not encountered during subsurface investigations.

A total of eight mammal bones were recovered (Table 1). Evidence of burning is exhibited in 87.5% (N=7) of the sample, suggesting that the materials were probably associated with the feature that had been destroyed.

Table 1

Site 25HN64
Inventory of Faunal Remains

Taxonomic Units	Surface Collections
cf. Odocoileus sp., deer	1
Artiodactyla, even-toed ungulates	5
Indeterminant Mammalia	2
Total Faunal Remains	8

SITE 25HN65

Methods

Faunal data were collected by both excavation (1/4 in screen) and flotation (1/16 in screen). Excavation materials were retrieved from levels 3 - 7 (40-80 cm below ground surface), inclusive, while materials

from feature 1 represent arbitrarily (approximately random) samples from throughout the feature fill. It is estimated that approximately one-fourth of feature 1 was excavated. Surprisingly, no botanical data were obtained via flotation.

Description

A total of 76 pieces of faunal material was recovered during this investigaiton. Five arbitrary 10 cm excavation levels (levels 3 - 7) yielded 35.5% (N=27), while the remaining 64.5% (N=49) were recovered from feature 1. Each faunal element was identified to the most refined taxonomic level possible through interpretation of various combinations of morphological evidence. Material that could not be minimally assigned to the family level was listed as indeterminate (Table 2).

Of the 76 pieces of faunal remains, 17.1% (N=13) were identifiable to three classes, six orders, eight families, seven genera, and three species. The remaining 82.9% (N=63) are regarded as indeterminate. Evidence of burning was observed on 27.6% (N=21) of the sample. Faunal remains exhibiting evidence of modification or butchering practices were not encountered. More than a single individual is not represented for any taxonomic unit. Flotation samples did not yield an increased representation of small mammal, bird, reptile, or fish remains as would be expected if these fauna were extensively exploited (Garson 1980; Thomas 1969).

Discussion

Deer species represent the primary source of animal protein. Bison remains were not recovered, contrary to what might be expected for a plains environment subsistence economy. The rodents (and sparrow) represented in the faunal assemblage may all be intrusive in nature or, if procured for food, represent a minimal amount of edible viands. All taxa except the migratory waterfowl would have been available throughout the year. The representative waterfowl (i.e., Anas sp., Aythya sp.) would have been available seasonally from September through December and from February through April (Bellrose 1976).

An aquatic snail of the family Physidae represents a recent intrusion. Freshwater mussels are available throughout the year, but lower water levels during late summer and early fall facilitate their collection. Due to the lack of a proper comparative collection of freshwater mussels for this geographic area, these specimens could not be identified. Complete valves were not recovered. Three or four of the fragments may be identifiable but represent specimens no larger than 2 in in length.

Table 2

Site 25HN65
Inventory of Faunal Remains

Taxonomic Units	Provenience: S15 W20 Levels: 3	4	5	6	7	Feature 1 1/4 In	1/16 In	Total
Identified								
Class Mammalia								
Order Artiodactyla								
Family Cervidae								
Odocoileus spp. (deer)						2		2
Order Lagomorpha								
Family Leporidae								
Lepus cf. townsendi (jackrabbit) cf. whitetail						1		1
Order Rodentia								
Family Geomyidae								
Geomys bursarius (plains pocket gopher)			1					1
Family Sciuridae								
Citellus spp. (ground squirrels)			1			1		2
Family Cricetidae								
Microtus ochrogaster (prairie vole)						1		1
Class Aves								
Order Anseriformes								
Family Anatidae (waterfowl)			2					2
Subfamily Anatinae								
Anas sp. (surface-feeding ducks)				1				1
Subfamily Aythyinae								
Aythya sp. (bay ducks)						1		1
Order Passeriformes								
Family Fringillidae (sparrows)			1					1
Class Gastropoda								
Family Physidae (aquatic snail)							1	1
Total Identified			5	1		6	1	13

Table 2 (cont'd)

Taxonomic Units	Provenience: S15 W20 Levels: 3	4	5	6	7	Feature 1 1/4 in	1/16 in	Total
Indeterminate Categories								
Order Artiodactyla, even-toed ungulates						1		1
Class Mammalia, mammals		1	4			3	3	11
Class Aves, birds	2	1				3	1	7
Class Pisces, fish						1		1
Bone, misc.	1	3	1			4	10	19
Order Pelecypoda, freshwater mussels		4	3	1		11	5	24
Total Indeterminate	3	9	8	1		23	19	63
Total Faunal Remains	3	9	13	1	1	29	20	76